S8428-1(a)
Errata

Drivers Involved in Fatal Collisions

In 1983, 39.4% of the drivers involved in statewide fatal collisions had been drinking intoxicants. This was a 16.5% decrease over the four year baseline period. In the rural areas 41.0% of the drivers involved in fatal accidents had been drinking alcohol, a decrease of 14.2% over the baseline. Urban areas recorded a 35.5% alcohol involvement rate in 1983. This was a 22.0% decrease in the percentage of alcohol involvement compared to the 4 year average (Table 2-1).

Table 2-1

SOBRIETY OF DRIVERS INVOLVED IN FATAL COLLISIONS

	Drivers Involved in Fatal Collisions						
Condition of Driver (Sobriety)	**1979**	**1980**	**1981**	**1982**	**Prev. 4 Yr. Average**	**1983**	**Change 83 - 4 Yr. Avg.**
STATEWIDE							
Had been drinking - ability impaired	426	437	364	333	390	260	- 33.3%
Had been drinking - ability not impaired	77	62	74	39	63	37	- 41.3%
Had been drinking - sobriety unknown	56	69	68	51	61	31	- 49.2%
Had not been drinking	669	584	556	489	575	502	- 12.7%
Not stated	101	94	71	49	79	62	- 21.5%
Total drivers	1,329	1,246	1,133	961	1,167	892	- 23.6%
Total driver drinking	559	569	506	423	514	328	- 36.2%
Total drivers - excluding not stated	1,228	1,152	1,062	912	1,089	832	- 23.6%
No. drinking drivers per 100 involved	45.5	49.4	47.6	46.4	47.2	39.4	- 16.5%
No. of drunk drivers per 100 involved	34.7	37.9	34.3	36.5	35.8	31.3	- 12.6%
RURAL							
Had been drinking - ability impaired	318	328	291	265	301	198	- 34.2%
Had been drinking - ability not impaired	51	47	57	28	46	28	- 39.1%
Had been drinking - sobriety unknown	38	48	46	36	42	24	- 42.9%
Had not been drinking	506	419	406	362	423	360	- 14.9%
Not stated	45	44	33	21	36	32	- 11.1%
Total drivers	958	886	833	712	847	642	- 24.2%
Total driver drinking	407	423	394	329	388	250	- 35.6%
Total drivers - excluding not stated	913	842	800	691	812	610	- 24.9%
No. drinking driver per 100 involved	44.6	50.2	49.3	47.6	47.8	41.0	- 14.2%
No. of drunk drivers per 100 involved	34.8	39.0	36.4	38.4	37.1	32.5	- 12.4%
URBAN							
Had been drinking - ability impaired	108	109	73	68	90	62	- 31.1%
Had been drinking - ability not impaired	26	15	17	11	17	9	- 47.1%
Had been drinking - sobriety unknown	18	21	22	15	19	7	- 63.2%
Had not been drinking	163	165	150	127	151	142	- 6.0%
Not stated	56	50	38	28	43	30	- 30.2%
Total drivers	371	360	300	249	320	250	- 21.9%
Total driver drinking	152	145	112	94	126	78	- 38.1%
Total drivers - excluding not stated	315	310	262	221	277	220	- 20.6%
No. drinking drivers per 100 involved	48.3	46.8	42.7	42.5	45.5	35.5	- 22.0%
No. of drunk drivers per 100 involved	34.3	35.2	27.9	30.8	32.5	28.2	- 13.2%

*Amended 10-17-84.

Alcohol Involvement by Age Group

The younger driver, under 30 years of age, is over-represented in alcohol-related accidents. In 1983, the 16-20 year old drivers were involved in 18.5% of all alcohol-related accidents while comprising only 8.3% of all licensed drivers. The over-representation ratio for this age group is 2.2, indicating that the 16-20 year old drivers were involved in 2.2 times more alcohol-related collisions than the percentage of licensed drivers they represent. The 2.2 over-representation ratio was the same as the previous year (Figure 2-6). The 21-24 year old group is also involved in twice as many alcohol-related collisions as the portion of total drivers this age group represents. The over-involvement ratio of 2.4 is above the previous year (Figure 2-7). In 1983, the 25-29 year old group was involved in 1.45 times more alcohol-related crashes than the percentage of licensed drivers they represented. This group's over-involvement ratio increased from the previous year (Figure 2-8). The remaining age group, 30 years and older, was .60 times under-represented in alcohol-related crashes (Figure 2-9).

Figure 2-6 **16 - 20 Year Old Involvement in Alcohol Related Crashes as a Percentage of All Licensed Drivers Comprising the Group**

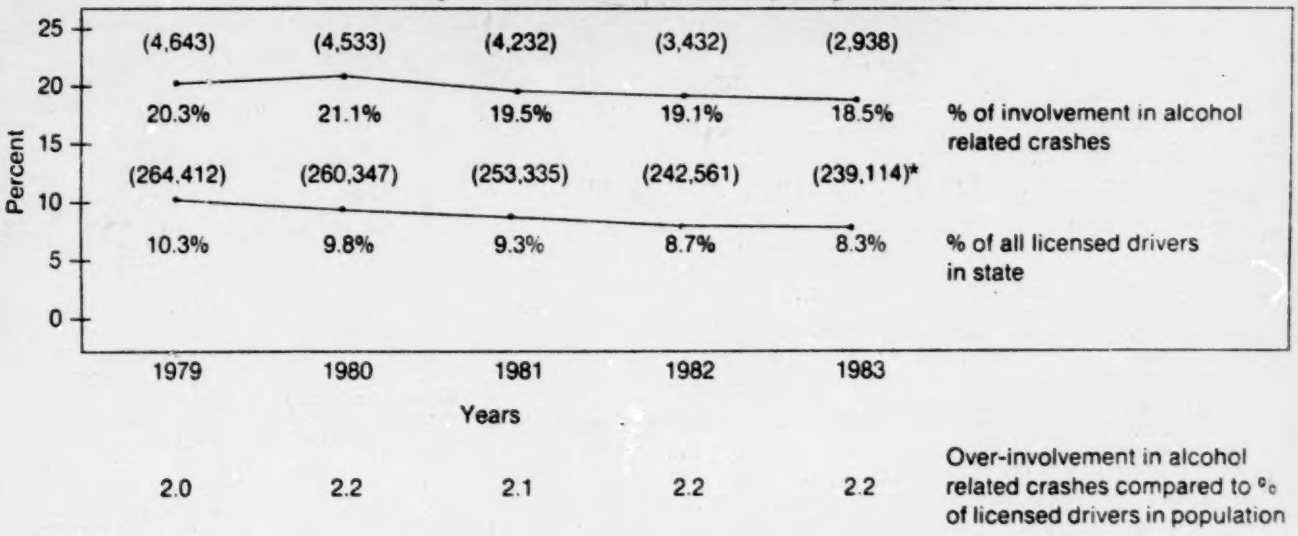
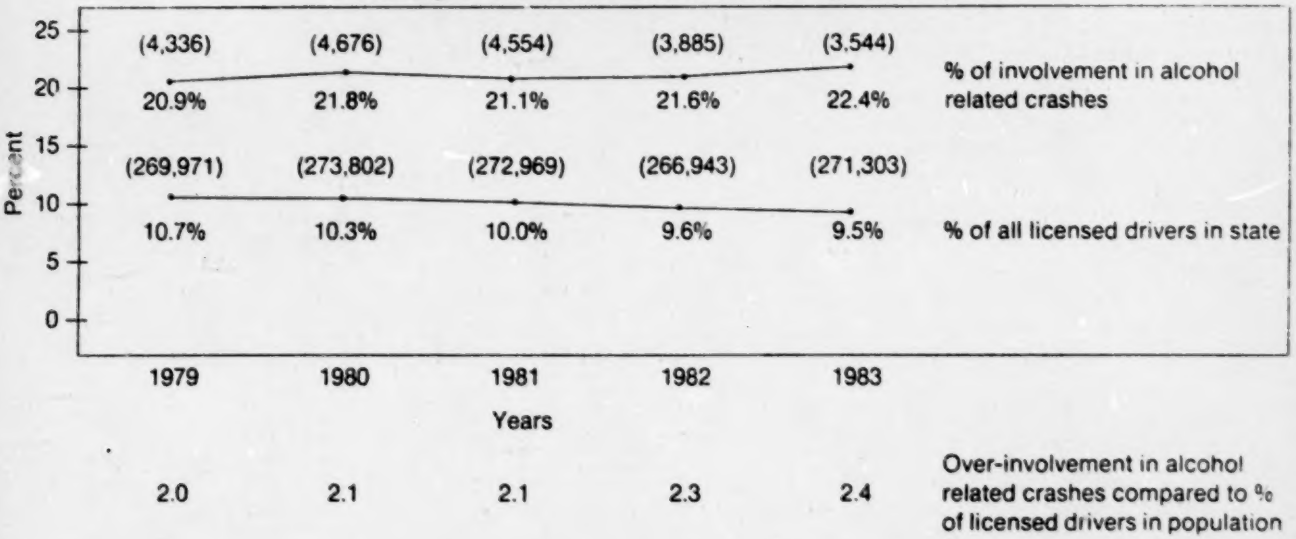


Figure 2-7 **21 - 24 Year Old Involvement in Alcohol Related Crashes as a Percentage of All Licensed Drivers Comprising the Group**



Errata

YOUTH INVOLVEMENT

Overview

In 1983, the young drivers (20 years old and younger) comprised 8.3% of all licensed drivers. This group was involved in 19.5% of the total 1983 collisions, for an accident over-representation rate 2.3 times higher than the percentage of licensed drivers comprising this group. The 21-24 year old age group was involved in 14.4% of the total collisions, while comprising 9.5% of all licensed drivers. The over-representation factor for this group was 1.5. The 25-29 year old age group was the modal group. It represented 14.8% of all accidents and 13.2% of all licensed drivers. It was over-represented by a factor of 1.23. All other age groups with the exception of the 65-69 age group, were under-represented when comparing the percentage of involvement in accidents to the percentage of licensed drivers comprising the groups (Table 3-1).

DRIVER AGE DISTRIBUTION — 1983

Table 3-1 **COMPARISON OF DRIVERS INVOLVED TO NUMBER LICENSED**

Age of Driver	Involved in Collisions Number	% of Total	Percent of Licensed Driver	Over/Under Representation Ratio
Under 16	700	0.43	—	—
16	4,513	2.79	0.93%	3.00
17-18	13,091	8.09	3.24%	2.50
19-20	13,252	8.18	4.17%	1.96
21-22	12,318	7.61	4.60%	1.65
23-24	11,036	6.82	4.86%	1.23
25-29	24,002	14.82	13.15%	1.23
30-34	19,604	12.11	12.92%	.68
35-39	15,202	9.39	11.40%	.86
40-44	10,698	6.61	8.65%	.71
45-49	7,687	4.75	6.77%	.74
50-54	6,936	4.28	6.13%	.60
55-59	6,485	4.00	6.11%	.64
60-64	5,702	3.52	5.84%	.35
65-69	4,228	2.61	4.73%	1.09
70 and over	6,482	4.00	6.50%	.98

YOUTHFUL DRIVER INVOLVEMENT IN COLLISIONS BY FIRST HARMFUL EVENT

In 1983, 72.3% of youthful driver's (24 years old and younger) involvement in total collisions involved colliding with other moving vehicles. This type of collision also resulted in the greatest percentage of fatal collisions (37.9%) and injury collisions (67.4%). Single vehicle collisions with fixed objects led to the second largest percentage of youthful driver involvement in total, fatal and injury collisions, at 17.0, 34.5 and 19.3% respectively (Table 3-2).

Table 3-2 **YOUTHFUL DRIVERS BY FIRST EVENT — 1983**

	In Total Collisions	Percent of Total	In Fatal Collisions	Percent of Total	In Injury Collisions	Percent of Total
Collision with other moving motor vehicles	34,476	72.3%	100	37.9%	12,909	67.4%
Collision with parked vehicle	1,971	4.1%	5	1.9%	513	2.7%
Collision with fixed/ other object	8,101	17.0%	91	34.5%	3,702	19.3%
Overturning and other non-collision	2,170	4.5%	37	14.0%	1,322	6.9%
Other Collision with Ped/Pedal, Animal, R.R. Train	988	2.1%	31	11.7%	714	3.7%
TOTAL	47,706	100.0%	264	100.0%	19,160	100.0%

*Amended 10-17-84.

YOUTHFUL COLLISION INVOLVEMENT BY AGE GROUP

In 1983, the 16-20 year old age group's frequency and percent of involvement in total collisions continued to diminish along with the percent of total licensed drivers this age group comprises. This group's over-representation ratio (% of total collisions ÷ % of licensed drivers) of **2.30** was up from the 2.25 ratio for the past year. It is also the highest over-representation ratio for any age group (Figure 3-1). The 21-24 year old age group maintained an over-representation ratio of 1.5 for the fifth year in a row (Figure 3-2). The 25-29 year old age group had the smallest over-representation ratio of the youthful drivers in 1983 at 1.12 down slightly from the 1.15 ratio in 1982 (Figure 3-3). The 30 year old and over age group continues to be under-represented in total collisions compared to the percentage of licensed drivers this age group comprises (Figure 3-4).

Figure 3-1 **16-20 Year Old % Of Involvement In Total Collisions Compared to % of Licensed Drivers Comprising the Age Group**

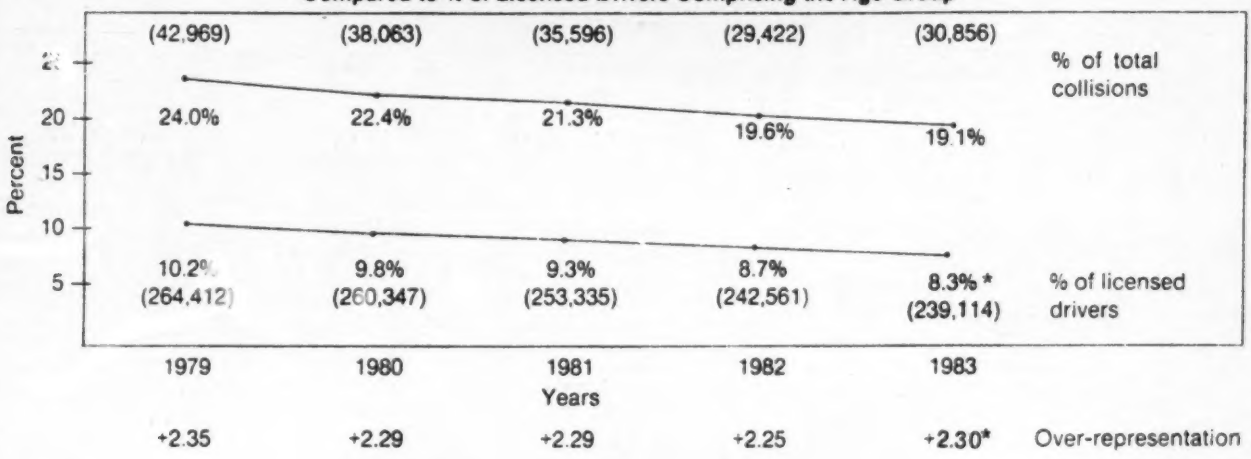


Figure 3-2 **21-24 Year Old % of Involvement in Total Collisions Compared to % of Licensed Drivers Comprising the Age Group**

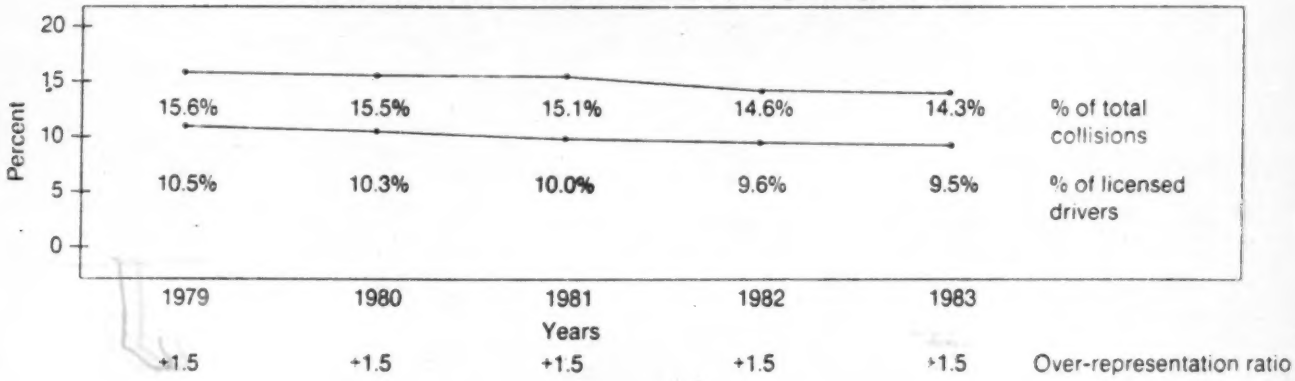
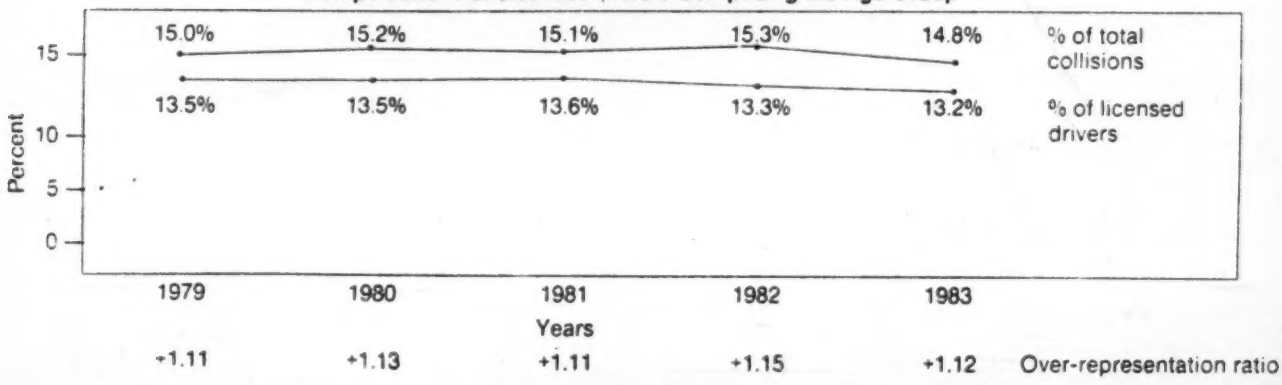


Figure 3-3 **25-29 Year Old % of Involvement in Total Collisions Compared to % of Licensed Drivers Comprising the Age Group**



S8428-1

S T A T E O F W A S H I N G T O N

DATA SUMMARY & ANALYSIS

of

1984 TRAFFIC COLLISIONS

Prepared By:

Orman Vertrees, Research Investigator
Washington Traffic Safety Commission

PART II

OVERALL STATEWIDE PROBLEM ANALYSIS

II — OVERALL STATEWIDE PROBLEM ANALYSIS

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STATEWIDE SUMMARY

Overview

The number of persons killed on the state's highways in 1984 totalled 761, a 2.2% decline from the 1981-1983 three-year baseline average of 778. Similarly, there was a 2% drop in the total number of fatal collisions for 1984 compared to the average for 1981-1983. Increases for 1984 over the three-year baseline period were recorded in the categories of total collisions, injury collisions, total number of persons injured and property damage only collisions (Table 1-1).

Table 1-1

IMPACT	Years				Prev. 3 Yr. Average (81-83)	% of Change '84 - 3 Yr. Average
	1984	1983	1982	1981		
Total Collisions	111,655	106,597	100,644	111,993	106,411	+ 4.9%
Fatal Collisions	687	635	679	790	701	- 2.0%
Total Killed	761	705	757	872	778	- 2.2%
Injury Collisions	42,076	40,273	37,790	41,947	40,003	+ 5.2%
Total Injured	61,366	58,317	54,789	61,083	58,063	+ 5.7%
Property Damage Only Collisions	68,892	65,689	62,175	69,256	65,707	+ 4.8%

Exposure

A 7.6% increase in motor vehicle miles travelled was recorded for 1984 over the 1981-1983 baseline period. Motor vehicle registration jumped by 2.8% over baseline while the number of licensed drivers was up 6.5%. In 1984 the state's population increased over the 1981-83 average by 1.5% to a total of 4,328,100 persons (Table 1-2).

Table 1-2

EXPOSURE	Years				Prev. 3 Yr. Average (1981-1983)	% of Change 1984 to prior 3 yr. Average
	1984	1983	1982	1981		
**Motor Vehicle Travel	33,344.0	32,275.0	30,353.0	30,346.0	30,991.0	+ 7.6%
Motor Vehicle Registration	3,459,772	3,372,966	3,313,348	3,408,871	3,365,062	+ 2.8%
Licensed Drivers	2,973,468	2,867,032	2,774,212	2,732,722	2,791,322	+ 6.5%
State's Population	4,328,100	4,285,100	4,264,000	4,248,100	4,265,733	+ 1.5%

**In Millions

Rates

The 1984 motor vehicle traffic death rate rose slightly to 2.28 deaths per 100 million vehicle miles of travel from 1983's 2.18. However, this represented a 9.2% decline from the baseline average. The rate of 1.84 injuries per one million vehicle miles in 1984 was a 1.6% decline from the baseline (Table 1-3).

Table 1-3

RATES	Years				Prev. 3 Yr. Average (1981-1983)	% of Change 1984 to prior 3 yr. Average
	1984	1983	1982	1981		
Death Rate (Deaths per 100M vehicle miles)	2.28	2.18	2.49	2.87	2.51	- 9.2%
Injury Rate (Injury per 1M vehicle miles)	1.84	1.81	1.81	2.01	1.87	- 1.6%

Fatalities by Status

Drivers continued in 1984 as the most common status of those killed as a result of motor vehicle collisions. Fatalities in this classification increased from 343 in 1983 to 392 in 1984. The 1984 figure increased 5.7% from the average of the three previous years. In contrast, the number of motorcycle drivers fatally injured in collisions declined from 72 in 1983 to 62 the following year. This represented a 26.2% decline over the three-year baseline (Table 1-4).

Table 1-4

Status	Years				Prev. 3 Yr. Average (1981-1983)	% of Change '84 - 3 Yr. Average
	1984	1983	1982	1981		
Drivers (does not include motorcyclists)	392	343	354	416	371	+ 5.7%
Passengers	189	182	186	214	194	- 2.6%
Pedestrians	97	89	101	121	104	- 6.7%
Bicyclists	11	14	8	20	14	- 21.4%
Motorcycle Drivers	62	72	92	88	84	- 26.2%
Motorcycle Passengers	10	5	16	13	11	- 9.0%
Totals	761	705	757	872	778	- 2.2%

Traffic Collisions, Deaths, Injuries, Travel and Death Rate

The steady decline in the number of traffic fatalities that followed the state's 1979 high point of 1,034 reached bottom at 705 in 1983 but then ascended to 761 the following year for a 7.9% increase. The 1984 count, however, was still the third lowest since the same number was recorded in 1974 (Figure 1-1). Motor vehicle travel in 1984 increased by 3.3% over 1983 to reach an all-time high of 33.34 billion miles (Figure 1-2).

The state's 1984 traffic fatality rate of 2.28 deaths per 100 million vehicle miles of travel continued below the national rate of 2.70 for the year. The state rate thus represented the second lowest figure in this category since 1969, exceeded only by the record low of 2.18 recorded for 1983 (Figure 1-3). Total reported motor vehicle traffic collisions and injuries increased over 1983. Total collisions were up 4.7% while the number of persons injured rose by 5.2% (Figure 1-4).

Collisions by Type

A 5.1% increase in multiple vehicle collisions over 1983 was recorded in 1984 (Figure 1-5). Similarly, single vehicle collisions were up 4.9% (Figure 1-6). In contrast, vehicle-pedestrian collisions dropped 2.3% from 1983 (Figure 1-7) while vehicle-pedalcyclist collisions experienced an even sharper decline of 4.6% (Figure 1-8). The greatest drop occurred in the category of fatal vehicle-pedalcyclist collisions. Here, 21.4% fewer such collisions were recorded in 1984 than in the previous year (Table 1-4).

Highways, Travel and Fatalities

The interstate system continued to be the most-traveled road system in the state in 1984, recording 8.319 billion miles, up from the 8.053 billion miles of 1983. This system's death rate, already the lowest in the state, declined even further from 0.92 in 1983 to 0.73 per 100 million vehicle miles in 1984.

City streets, second only to the interstate system in vehicle miles traveled in 1984, likewise posted a decline in the death rate. Motorists rolled up 7.953 billion vehicle miles in the cities while recording a death rate of 1.42, down from 1.51 in 1983 and 1.67 in 1982. U.S. numbered routes fared less favorably, posting a 3.31 death rate, up from the previous year's 1.86 as state numbered routes also recorded an increase from 1983's 2.68 to 1984's 3.07. County roads were traveled 6.579 billion miles and recorded a death rate of 3.78 in 1984, a decline from the previous year's 3.99 rate. Total motor vehicle travel in the state increased from 32.275 billion miles to 33.344 billion (Table 1-5).

Figure 1-1

TRAFFIC DEATHS 1974-1984

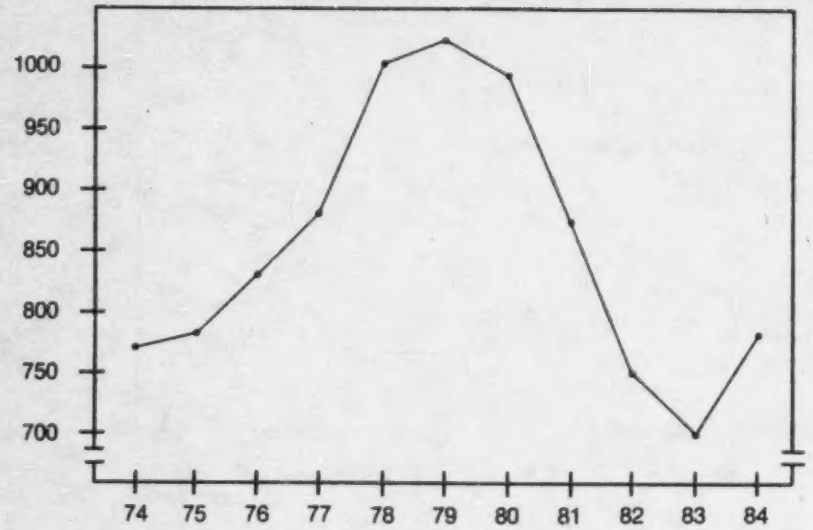


Figure 1-2

MILES TRAVELED (in billions)

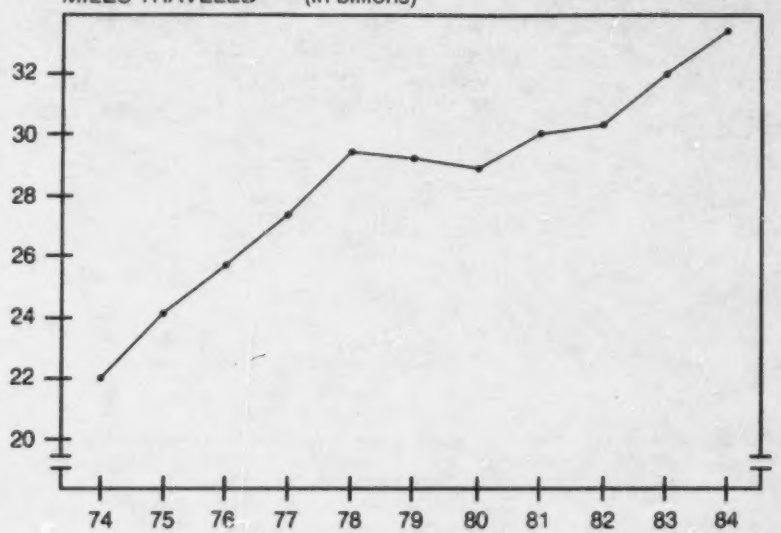


Figure 1-3

DEATH RATE
(per 100 million vehicle miles)

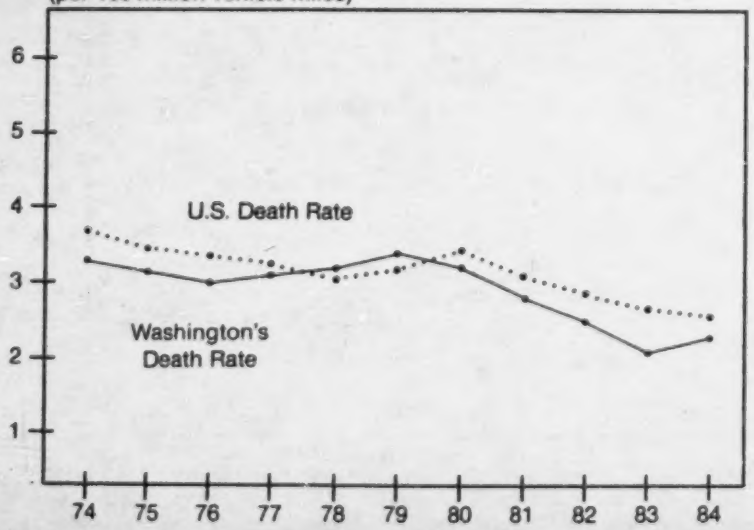


Figure 1-4

TOTAL REPORTED MOTOR VEHICLE TRAFFIC
COLLISIONS AND INJURIES (in thousands)

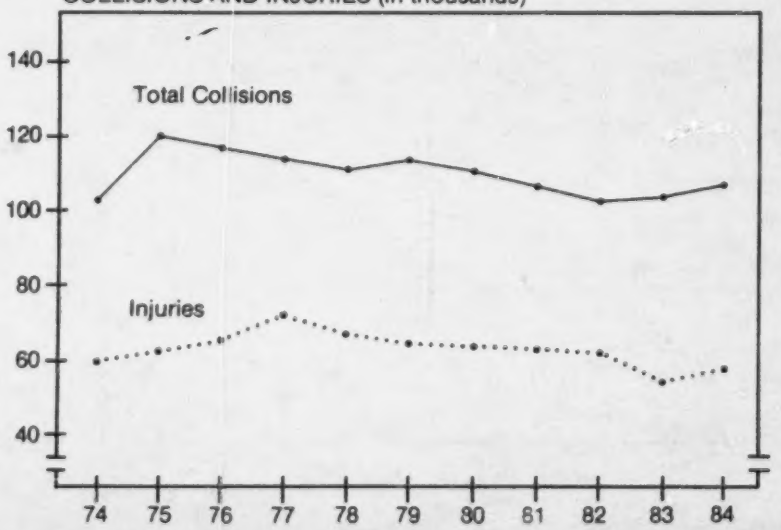


Figure 1-5
MULTIPLE VEHICLE COLLISIONS
(in thousands)

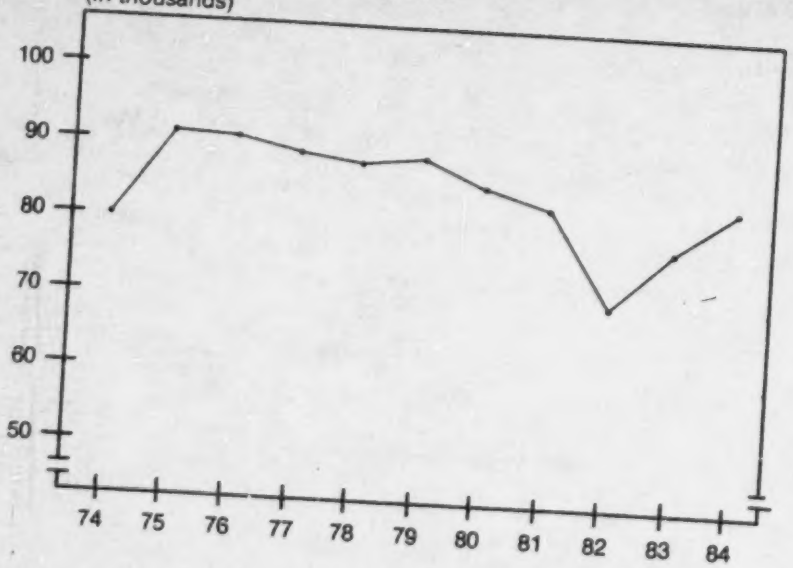


Figure 1-6
SINGLE VEHICLE COLLISIONS
(in thousands)

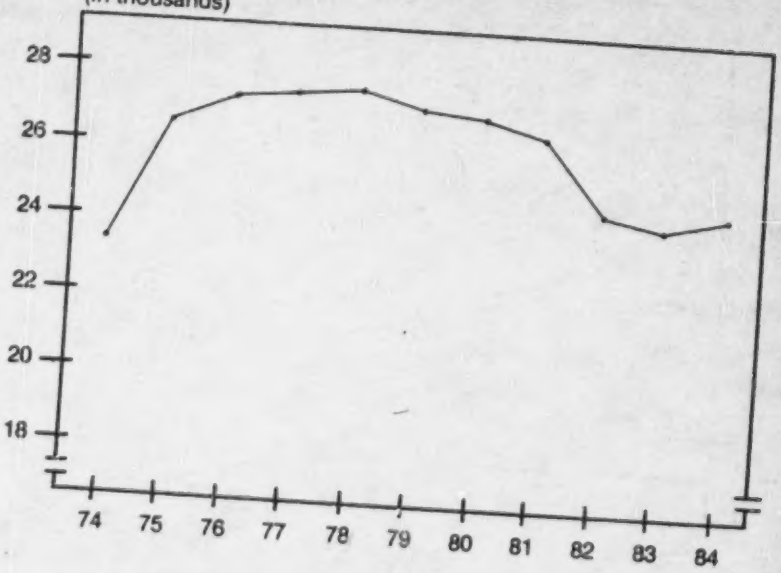


Figure 1-7
VEHICLE-PEDESTRIAN COLLISIONS
(in hundreds)

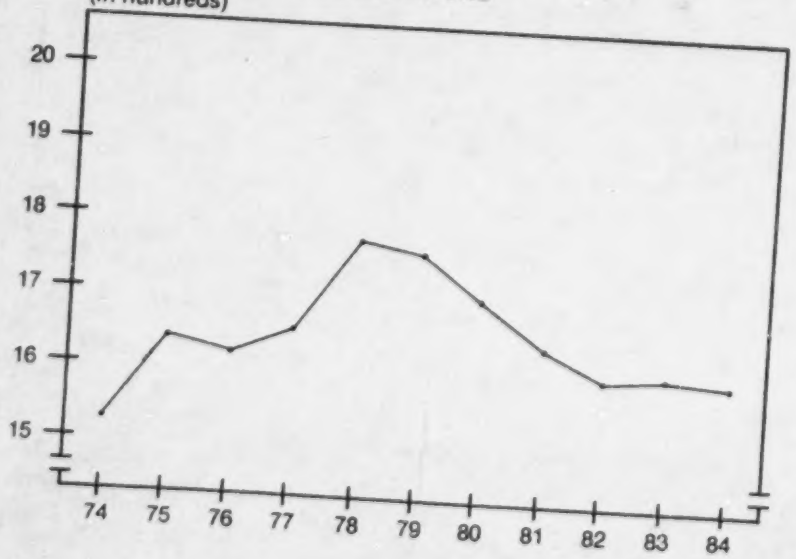


Figure 1-8
VEHICLE-PEDALCYCLIST COLLISIONS
(in hundreds)

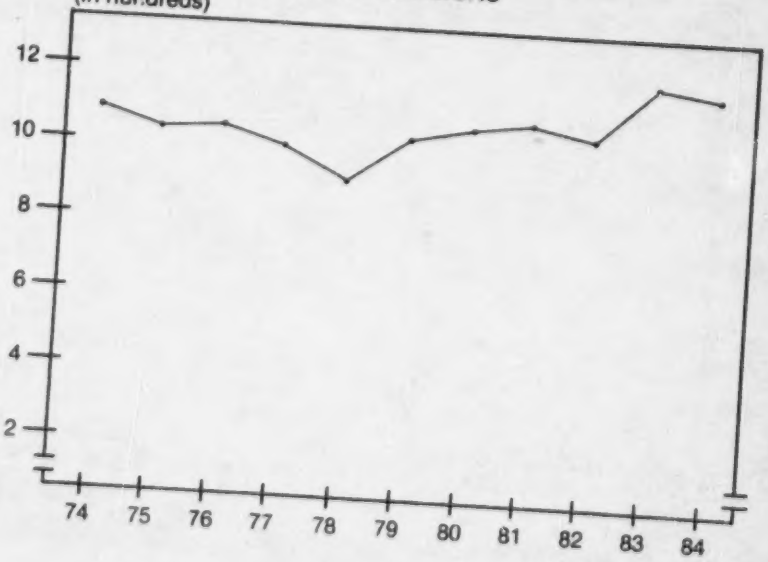
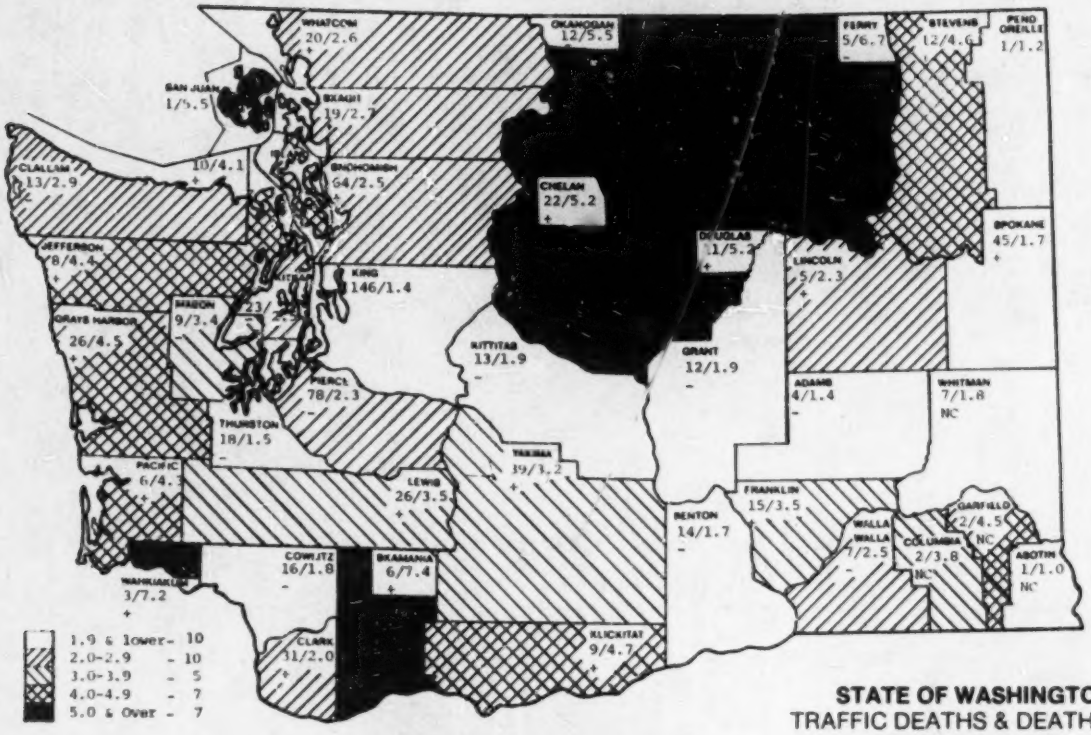


Figure 1-9



Traffic Deaths/Death Rate
761/2.3
- = fewer traffic deaths than 1983
+ = more traffic deaths than 1983

STATE OF WASHINGTON
TRAFFIC DEATHS & DEATH RATE
By County — 1984
Statewide Death Rate 2.3

Table 1-5

HIGHWAYS, TRAVEL AND FATAL ACCIDENTS — 1984

Type of Highways	Miles of Highway	Percent of Total Highways	Veh. Miles Traveled (Millions)	Percent of Total Veh. Mi. Traveled	Total Collisions	Number Killed	*Death Rate Per CMVM
Interstate System**	706	.83	8,319	24.95	9,444	61	0.73
U.S. Numbered Routes	1,592	1.88	2,838	8.51	4,730	94	3.31
State Numbered Routes	4,662	5.50	7,582	22.74	20,276	233	3.07
County Roads	41,351	48.78	6,579	19.73	24,620	249	3.78
City Streets	10,110	11.93	7,953	23.85	51,836	113	1.42
All Other Traffic Ways	26,349	31.08	73	.22	749	11	—
TOTAL	84,770	100.00	33,344	100.00	111,655	761	2.28

*Fatalities per hundred million vehicle miles, based on roadway travel as reported by the Department of Transportation.
**Does not include traveled way.

Figure 1-10

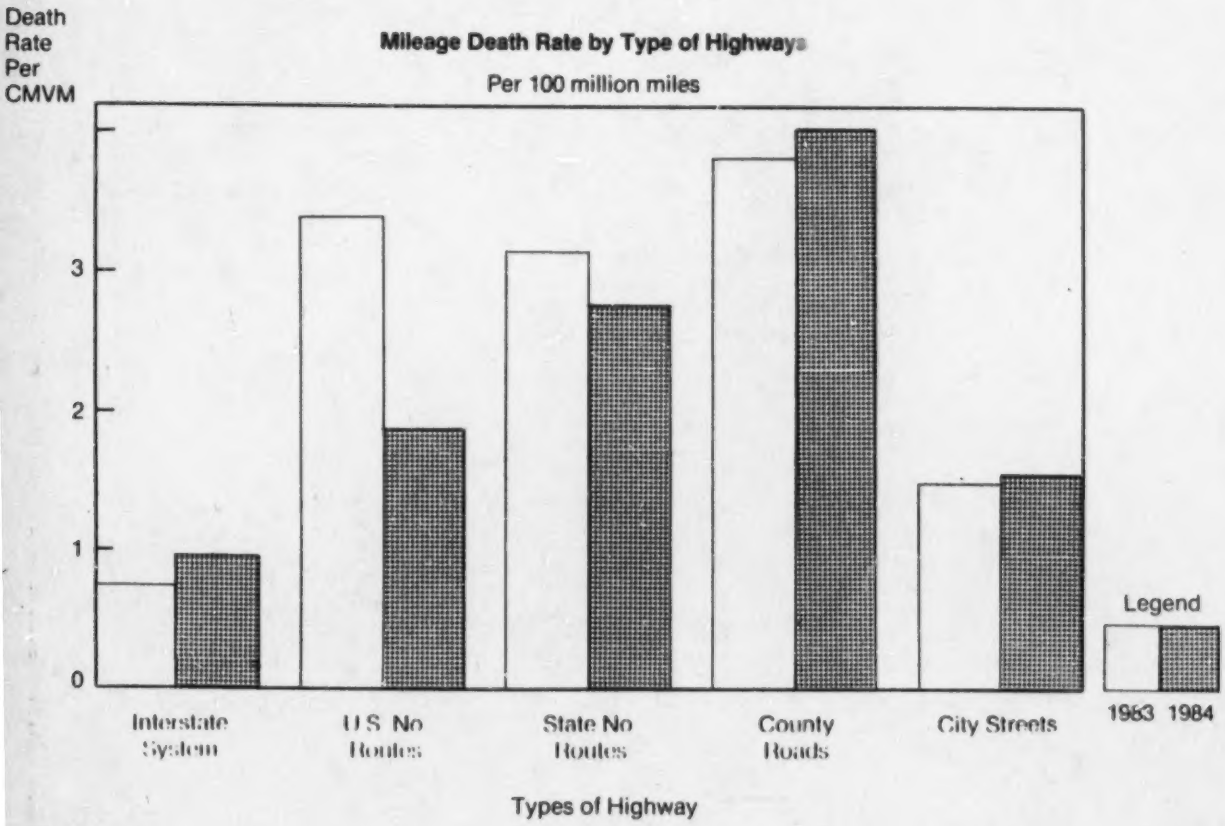


Figure 1-11

Traffic Fatalities
In 1984 and
Percent Change from 1983

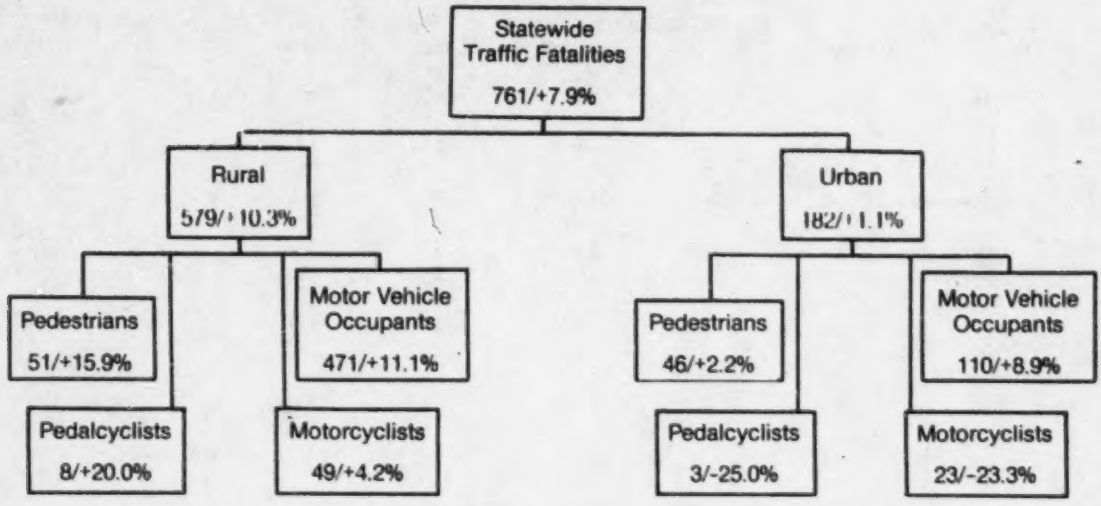


Figure 1-12

Traffic Fatalities by Age and Sex

1984

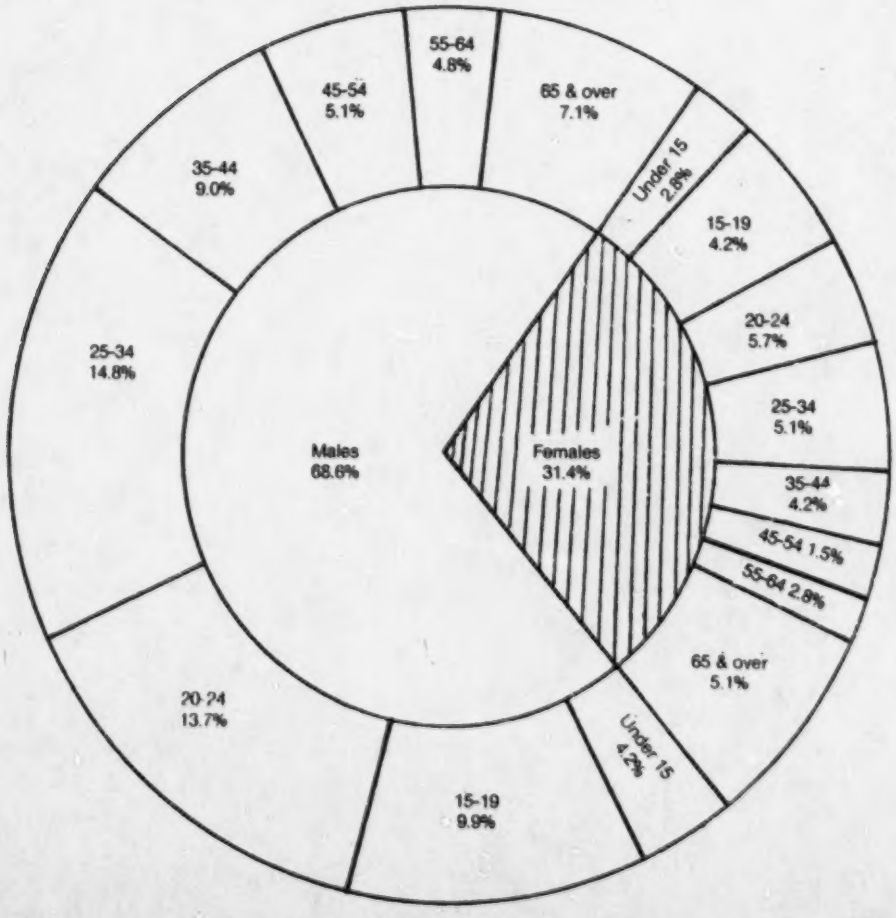


Table 1-6

PERSONS KILLED AND INJURED BY AGE BY STATUS
1984

Age	Total		Occupants		Pedestrians		Pedalcyclists	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
0 - 4	14	1,087	6	992	8	75	0	19
5 - 9	17	1,583	10	1,192	6	215	1	174
10 - 14	22	2,018	12	1,460	8	194	2	360
15 - 19	107	10,369	100	9,910	6	215	1	241
20 - 24	147	11,154	138	10,862	9	167	0	122
25 - 34	151	14,079	133	13,671	18	255	0	148
35 - 44	100	8,013	89	7,848	8	126	3	35
45 - 54	50	4,409	46	4,270	4	121	0	17
55 - 64	57	3,337	45	3,237	11	89	1	8
65 - 74	47	2,126	39	2,024	6	89	2	12
75 & Older	46	1,154	32	1,071	13	80	1	2
Not Stated	3	2,037	3	1,905	0	84	0	41
TOTAL	761	61,365	653	58,442	97	1,710	11	1,179

Table 1-6a

COMPARISON OF TRAFFIC DEATHS IN WASHINGTON
BY MONTH AND ACCUMULATED TOTALS — 1982, 1983, 1984

Month	1984		1983		1982		Percent of Change 1984 to 1983	
	Month	Year To Date	Month	Year To Date	Month	Year To Date	Month	Year to Date
January	48	48	49	49	52	52	- 2.0%	- 2.0%
February	41	89	34	83	36	88	+ 20.6%	+ 7.2%
March	56	145	46	129	54	142	+ 21.7%	+ 12.4%
April	50	195	76	205	61	203	- 34.2%	- 4.9%
May	68	263	47	252	73	276	+ 44.7%	+ 4.4%
June	82	345	65	317	75	351	+ 26.2%	+ 8.8%
July	83	428	73	390	76	427	+ 13.7%	+ 9.7%
August	75	503	67	457	75	502	+ 11.9%	+ 10.1%
September	63	566	64	521	92	594	- 1.6%	+ 8.6%
October	76	642	59	580	66	660	+ 28.8%	+ 10.7%
November	72	714	67	647	55	715	+ 7.5%	+ 10.4%
December	47	761	58	705	42	757	- 19.0%	+ 7.9%

Table 1-7

Collision Rates By County Population — 1984

County	1984 Population	Traffic Deaths	Death Rate*	No. of Injuries	Injury Rate**	Total Collisions	Collision Rate**
Over 1,000,000 Population							
1. King	1,326,600	146	11.00	21,169	15.95	40,487	30.52
250,000 to 500,000 Population							
1. Pierce	514,600	78	15.16	8,259	16.05	13,941	27.09
2. Snohomish	366,700	64	17.45	4,858	13.25	8,511	23.21
3. Spokane	349,400	45	12.88	5,589	16.00	9,306	26.63
100,000 to 250,000 Population							
1. Clark	201,700	31	15.37	2,578	12.78	4,135	20.50
2. Yakima	180,000	39	21.67	2,155	11.97	4,390	24.39
3. Kitsap	162,500	23	14.15	1,902	11.70	3,386	20.84
4. Thurston	136,200	18	13.22	1,795	13.18	3,381	24.82
5. Whatcom	113,700	16	14.07	1.377	12.11	2,526	22.22
6. Benton	107,700	14	13.00	994	9.23	2,189	20.32
50,000 to 100,000 Population							
1. Cowlitz	79,900	16	20.02	972	12.16	1,825	22.84
2. Skagit	66,800	19	28.44	934	13.98	1,640	24.55
3. Grays Harbor	65,100	26	39.94	869	13.35	1,663	25.55
4. Lewis	56,600	26	45.94	796	14.06	1,372	24.24
5. Clallam	52,900	13	24.57	563	10.64	1,069	20.21
25,000 to 50,000 Population							
1. Grant	49,500	12	24.24	478	9.66	920	18.59
2. Walla Walla	48,500	7	14.43	626	12.91	1,118	23.05
3. Island	47,800	10	20.92	433	9.06	698	14.60
4. Chelan	47,500	22	46.32	604	12.72	1,346	28.34
5. Whitman	39,700	7	17.63	419	10.55	717	18.06
6. Franklin	36,300	15	41.32	508	13.99	897	24.71
7. Mason	34,800	9	25.86	368	10.57	728	20.92
8. Okanogan	31,900	12	37.62	387	12.13	680	21.32
9. Stevens	30,100	12	39.87	304	10.10	529	17.57
10,000 to 25,000 Population							
1. Kittitas	25,000	13	52.00	462	18.48	997	39.48
2. Douglas	22,600	11	48.67	244	10.80	415	18.36
3. Pacific	17,700	6	33.90	186	10.51	338	19.10
4. Jefferson	17,000	8	47.06	249	14.65	408	24.00
5. Asotin	16,900	1	5.92	119	7.04	233	13.79
6. Klickitat	16,500	9	54.54	196	11.88	320	19.39
7. Adams	13,700	4	29.20	251	18.32	376	27.45
Under 10,000 Population							
1. Lincoln	9,800	5	51.02	142	14.90	202	20.61
2. Pend Oreille	9,100	1	10.10	125	13.74	180	19.78
3. San Juan	8,900	1	11.63	89	10.00	128	14.38
4. Skamania	7,900	6	75.95	103	13.04	186	23.54
5. Ferry	6,100	5	81.97	95	15.57	156	25.57
6. Columbia	4,100	2	48.78	65	15.85	111	27.07
7. Wahkiakum	3,800	3	78.95	56	14.74	80	21.05
8. Garfield	2,500	2	80.00	47	18.80	71	28.40
Total	4,328,100	761	17.58	61,366	14.18	111,655	25.80

*Frequency per 100,000 Population
**Frequency per 1,000 Population

Collision Rate By City Population — 1984

(Does not include collisions on state limited access roads or freeways)

City	1984 Population	Traffic Deaths	Death Rate*	No. of Injuries	Injury Rate**	Total Collisions	Collision Rate**
250,000 and over Population							
1. Seattle	490,300	45	9.2	8,489	17.31	17,329	35.34
100,000 to 250,000 Population							
1. Spokane	171,500	18	10.5	3,227	18.02	5,903	34.42
2. Tacoma	159,400	16	10.0	3,285	20.61	5,813	36.47
50,000 to 100,000 Population							
1. Bellevue	78,620	1	1.3	979	12.45	2,125	27.03
2. Everett	56,680	7	12.3	821	14.48	1,805	31.84
25,000 to 50,000 Population							
1. Yakima	49,340	5	10.1	860	17.43	1,957	39.66
2. Bellingham	46,010	4	8.7	537	11.67	1,223	26.53
3. Vancouver	42,850	7	16.3	861	20.09	1,365	31.85
4. Kennewick	37,240	2	5.4	261	7.00	843	22.64
5. Bremerton	33,970	3	8.8	541	15.93	1,148	33.79
6. Renton	33,340	3	9.0	608	18.24	1,292	38.75
7. Richland	31,660	1	3.2	309	9.76	610	19.27
8. Longview	29,820	2	6.7	409	13.72	863	28.94
9. Auburn	29,170	2	6.9	446	15.29	800	27.42
10. Olympia	28,790	1	3.5	480	16.67	1,086	37.72
11. Edmonds	27,880	1	3.6	274	9.83	543	19.48
12. Redmond	27,340	1	3.7	298	10.90	689	25.20
13. Kent	26,250	6	22.9	711	27.09	1,190	45.33
14. Walla Walla	25,640	0	—	311	12.13	646	25.19
15,000 to 25,000 Population							
1. Lynnwood	23,139	1	4.3	500	21.62	944	40.81
2. Pullman	22,770	0	—	92	4.04	257	11.29
3. Mercer Island	20,910	1	4.8	69	3.30	194	9.28
4. Pasco	18,930	3	15.8	268	14.16	558	29.48
5. Kirkland	18,670	1	5.4	185	9.91	498	26.67
6. Puyallup	18,600	1	5.4	316	16.99	566	30.43
7. Aberdeen	17,400	1	5.7	172	9.88	555	31.90
8. Wenatchee	17,330	1	5.8	178	10.27	568	32.78
9. Port Angeles	17,220	1	5.8	183	10.63	437	25.38
10. Mountlake Terrace	16,020	0	—	111	6.93	266	16.60
10,000 to 15,000 Population							
1. Lacey	14,520	0	—	151	10.40	332	22.86
2. Mount Vernon	13,730	1	7.3	187	13.62	401	29.20
3. DesMoines	13,100	0	—	144	10.99	233	17.78
4. Oak Harbor	12,210	0	—	100	8.19	184	15.07
5. Centralia	11,770	1	8.5	129	10.96	323	27.44
6. Ellensburg	11,590	0	—	72	6.21	200	17.26
7. Kelso	10,840	0	—	143	13.19	286	26.38
8. Moses Lake	10,350	0	—	105	10.14	275	26.57
Statewide urban (Less Urban freeways)	2,165,585	155	7.2	28,887	13.34	59,530	27.49

*Frequency per 100,000 population
**Frequency per 1,000 population

EXPLANATION OF PROBLEM

ANALYSIS PROCESS

Explanation of Problem Analysis Process

In developing the Problem Identification section for the 1986 Highway Safety Plan (HSP), problem areas were classified into two basic types: impact problems and system support problems.

Impact problems are those whose factors contribute directly to the occurrence of accidents, fatalities and/or injuries and may be corrected through the implementation of countermeasures designed to reduce the effects of these factors.

System support problems are those deficiencies within vital traffic safety programs whose correction may not be directly reflected in a reduction in traffic accidents, injuries or fatalities.

The basis for impact and system support problem identification, analysis and selection for inclusion into the HSP was done in two ways.

1. Impact problem areas were based on identifying statewide experience in impact areas (where information was available) outlined in the Federal safety standards. Various statewide automated and manual traffic information systems were inventoried and analyzed. The data sources included: Traffic Accident Records, Fatal Accident Reporting System, Driver's Licensing Records, Vehicle Registration Records and Highway/Roadway Information. In most instances, four years' worth of data were gathered as a baseline to serve as a point of comparison to the current year's activity level.

2. The second source for problem identification inclusion in the HSP resulted from analysis by and for various state and local agencies with an interest in highway safety. The Washington Traffic Safety Commission made it known that the two main emphasis areas in FY 1986 were the non-use of occupant restraint systems, and alcohol-related crashes.

Data Analysis and Statistical Techniques

Data analysis was a key factor in the identification and selection of the traffic problem areas included in this Plan. The analyses were performed to ensure that the conclusions drawn from the data were valid and credible.

The most common data sources in the HSP were the statewide traffic accident records, which were used for identifying the specific traffic problem areas. Four continuous years (1980-1983) of crash experience were used to serve as a baseline in analyzing traffic accident data. This baseline was used to obtain a better perspective to assess the current year's (1984) experience with traffic problem areas. The baseline also serves to negate short-term changes in crash patterns.

The development of over/under-representation ratios were the most frequently used methods of analysis. Where relevant exposure data were available, the generation of over-representation ratios allow for the comparisons of different subgroups relative to the percentage of the population they comprise. Additionally, county and city rankings were generated for different problem areas to compare geographical and political subdivisions.

ANALYSIS OF SELECTED TRAFFIC PROBLEMS

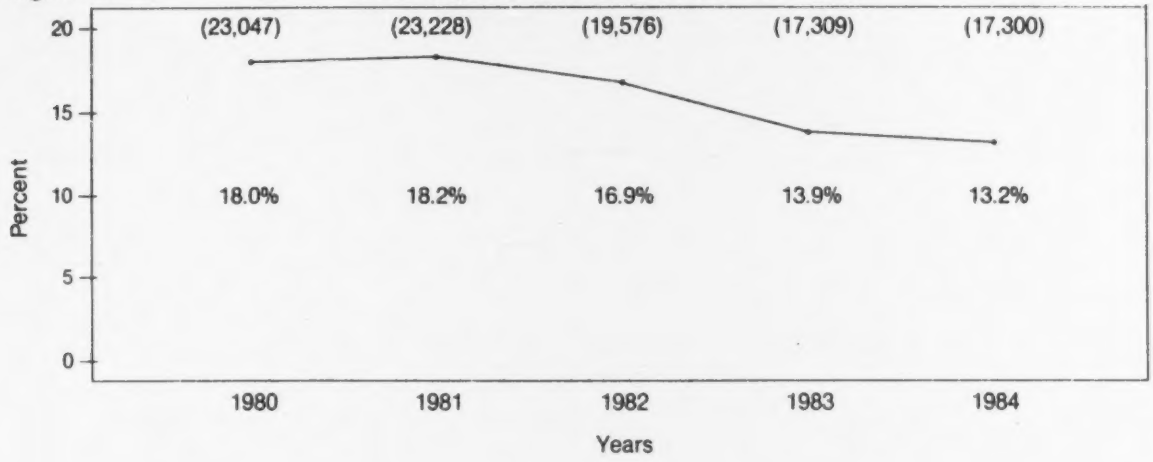
- Alcohol Involvement
- Youth Involvement
- Safety Restraint Usage
- Motorcycle Collisions
- Pedalcycles
- Pedestrians
- Heavy Trucks
- Pupil Transportation
- Contributory Driver Violations
- Vehicle Defects

ALCOHOL INVOLVEMENT

Overview

In 1984, 13.2% of all drivers involved in traffic collisions had been drinking alcohol. This is a 5% decrease from 1983 and continues a three-year downward trend reversing the 1980 to 1981 figure showing an increase in the number of drivers who had been drinking (Figure 2-1).

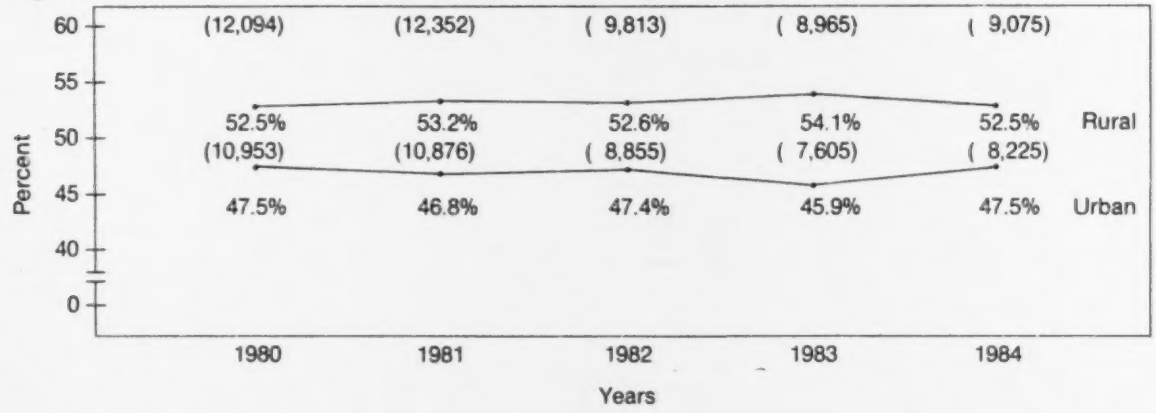
Figure 2-1 **Alcohol Involvement of Drivers in Total Collisions**



Location of Alcohol Related Collisions

In 1984 the urban-rural breakdown of alcohol-related collisions shifted slightly with a decrease in rural areas and an increase in the urban areas compared to 1983; 52.5% of the alcohol-related collisions occurred in rural areas and 47.5% in urban areas (Figure 2-2).

Figure 2-2 **Alcohol Related Collisions by Urban and Rural Areas**



The predominant type of alcohol-related vehicle collisions continued to be multiple-vehicle mishaps in urban areas (Figure 2-3) with the opposite holding true in rural areas (Figure 2-4). Of the urban collisions, 64.8% involved two or more vehicles while only 34.6% were multiple vehicle crashes on rural roads.

Figure 2-3 **Urban areas, percentage of single vs. multiple alcohol involved Vehicle Collisions**

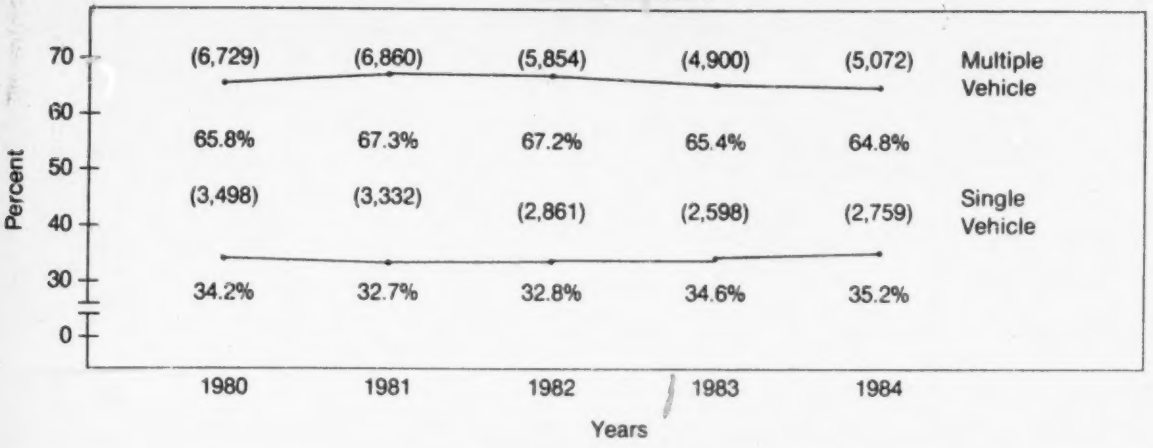
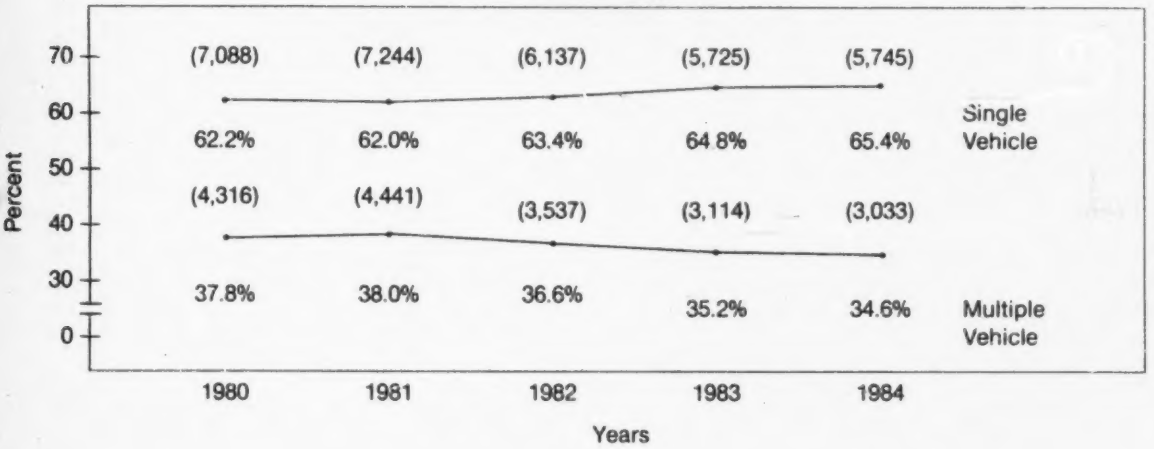


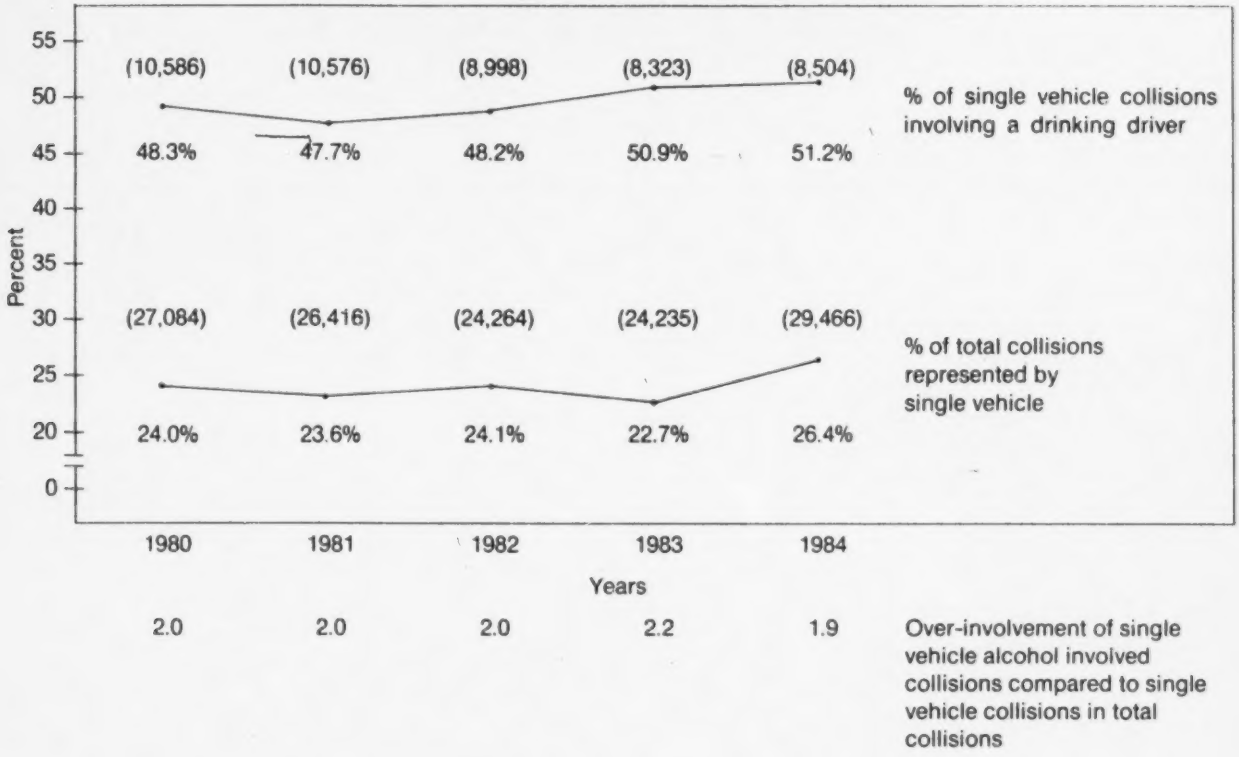
Figure 2-4 **Rural areas, percentage of single vs. multiple alcohol related Vehicle Collisions**



Single Vehicle Accidents Involving Alcohol

In 1984 the percentage of all single vehicle accidents where the driver had been drinking remained relatively stable at nearly 50% of the total single vehicle accidents. The percentage of total accidents that the single vehicle accident represents reached a new high of 26.4% in 1984 compared to the percentages for the years 1980 through 1983 (Figure 2-5). Comparing the percentage of alcohol involvement in single vehicle collisions to the percentage of total collisions the single vehicle collision represents allows for the generation of a ratio to express the over-representation of alcohol in single vehicle collisions. In 1984, this ratio decreased for the first time since 1980, declining to 1.9 from the previous year's 2.2.

Figure 2-5 **Alcohol Involvement in Single Vehicle Collisions Compared to the percent of Total Collisions Involving Single Collisions**



Drivers Involved in Fatal Collisions

In 1984, 39.2% of the drivers involved in statewide fatal collisions had been drinking intoxicants, a decline for the fifth straight year. The year 1984 registered 14.8% fewer drivers in this category than the four-year baseline period of 1980-83. In rural areas, 40.5% of the drivers in fatal accidents had been drinking, a 13.8% decline over the 1980-83 average. In urban areas, the figure was 35.3%, a 16% decrease from baseline (Table 2-1).

Table 2-1

SOBRIETY OF DRIVERS INVOLVED IN FATAL COLLISIONS

	Drivers Involved in Fatal Collisions						
Condition of Driver (Sobriety)	**1980**	**1981**	**1982**	**1983**	**Prev. 4 Yr. Average**	**1984**	**Change 84 - 4 Yr. Avg.**
STATEWIDE							
Had been drinking - ability impaired	437	364	333	260	349	307	- 12.0%
Had been drinking - ability not impaired	62	74	39	37	53	52	- 1.9%
Had been drinking - sobriety unknown	69	68	51	31	55	11	- 80.0%
Had not been drinking	584	556	489	502	533	574	+ 7.7%
Not stated	94	71	49	62	69	41	- 41.0%
Total drivers	1,246	1,133	961	892	1,058	985	- 6.9%
Total drivers drinking	569	506	423	328	457	370	- 19.0%
Total drivers - excluding not stated	1,152	1,062	912	832	990	944	- 4.6%
No. drinking drivers per 100 involved	49.4	47.6	46.4	39.4	46	39.2	- 14.8%
No. of drunk drivers per 100 involved	37.9	34.3	36.5	31.3	35	32.5	- 7.1%
RURAL							
Had been drinking - ability impaired	328	291	265	198	271	246	- 9.2%
Had been drinking - ability not impaired	47	57	28	28	40	35	- 12.5%
Had been drinking - sobriety unknown	48	46	36	24	39	6	- 84.6%
Had not been drinking	419	406	362	360	387	422	+ 9.0%
Not stated	44	33	21	32	33	24	- 27.2%
Total drivers	886	833	712	642	768	733	- 4.6%
Total drivers drinking	423	394	329	250	349	287	- 17.8%
Total drivers - excluding not stated	842	800	691	610	736	709	- 3.7%
No. drinking drivers per 100 involved	50.2	49.3	47.6	41.0	47.0	40.5	- 13.8%
No. of drunk drivers per 100 involved	39.0	36.4	38.4	32.5	37.0	34.7	- 6.2%
URBAN							
Had been drinking - ability impaired	109	73	68	62	78	61	- 21.8%
Had been drinking - ability not impaired	15	17	11	9	13	17	+ 30.8%
Had been drinking - sobriety unknown	21	22	15	7	16	5	- 68.8%
Had not been drinking	165	150	127	142	146	152	+ 4.1%
Not stated	50	38	28	30	37	17	- 54.0%
Total drivers	360	300	249	250	290	252	- 13.1%
Total drivers drinking	145	112	94	78	107	83	- 22.4%
Total drivers - excluding not stated	310	262	221	220	253	235	- 7.1%
No. drinking drivers per 100 involved	46.8	42.7	42.5	35.5	42.0	35.3	- 16.0%
No. of drunk drivers per 100 involved	35.2	27.9	30.8	28.2	31.0	26.0	- 16.1%

Alcohol Involvement by Age Group

Drivers under 30 years of age continue to be over-represented in alcohol-related collisons. The 16-20 year old group comprised 8% of all licensed drivers in the state in 1984 but were involved in 17.7% of all alcohol-related accidents. This was an over-representation ratio of 2.2, meaning this age group was involved in 2.2 times more alcohol-related accidents than the percentage of licensed drivers it represented (Figure 2-6). The over-involvement ratio for drivers aged 21-24 in 1984 was 2.5. This age group's over-involvement ratio has climbed steadily since 1981 (Figure 2-7). In 1984 the 25-29 year age group was involved in 1.45 times more alcohol-related accidents than the percentage of licensed drivers the group represented (Figure 2-8). The remaining age group, 30 years and older, was under-represented by a ratio of .58 last year (Figure 2-9).

Figure 2-6 **16 - 20 Year Old Involvement in Alcohol Related Crashes as a Percentage of All Licensed Drivers Comprising the Group**

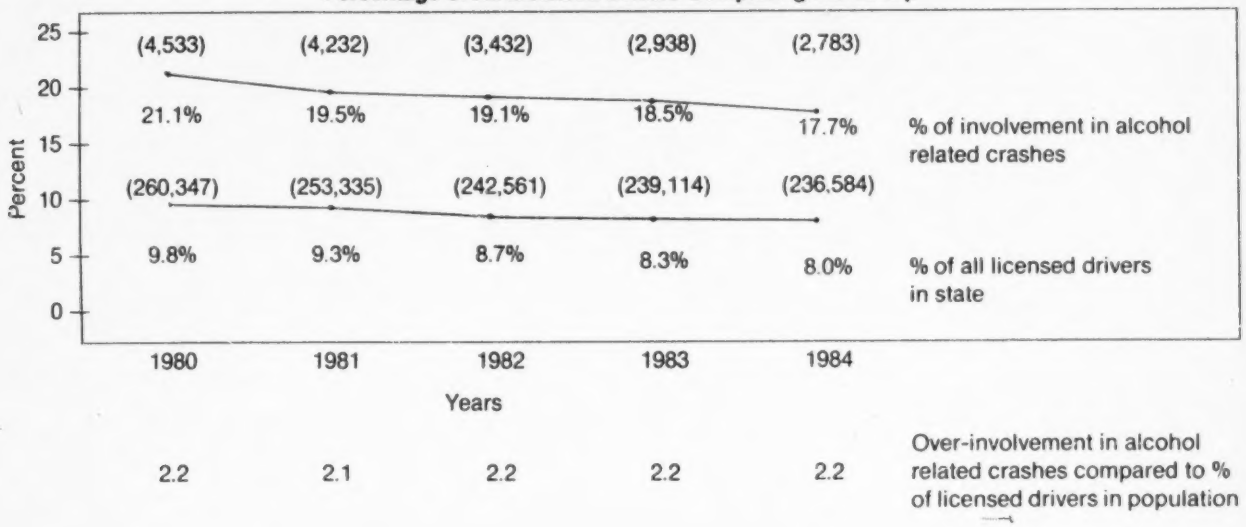


Figure 2-7 **21 - 24 Year Old Involvement in Alcohol Related Crashes as a Percentage of All Licensed Drivers Comprising the Group**

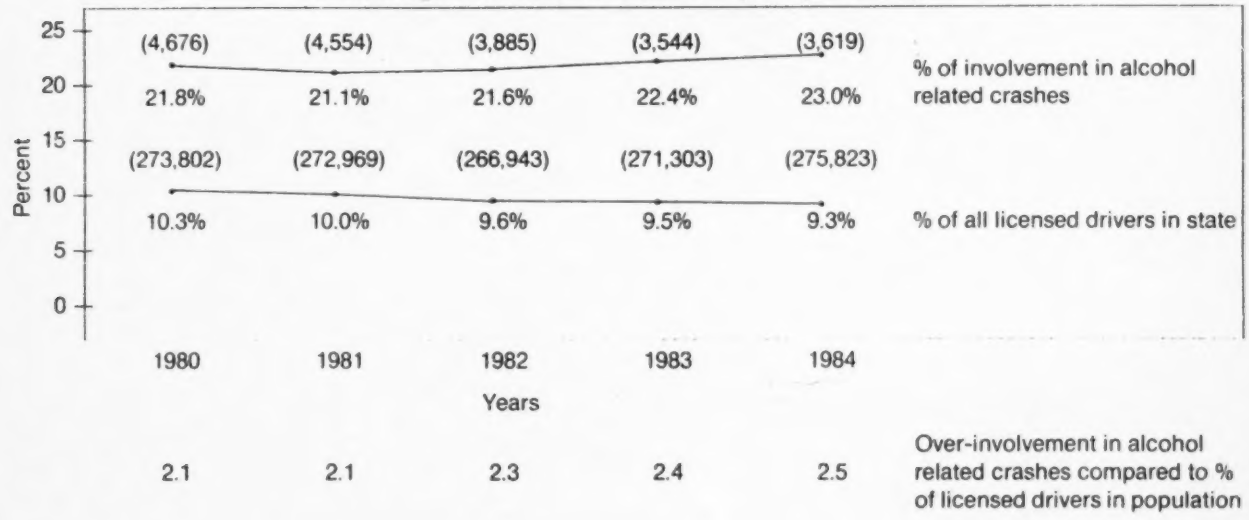
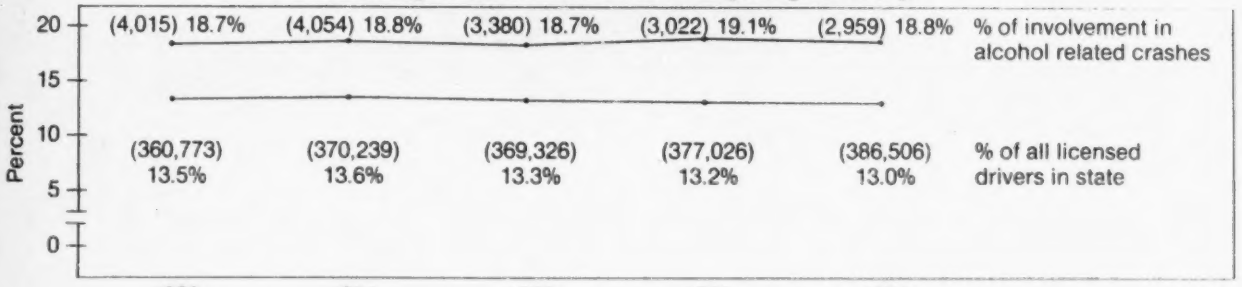
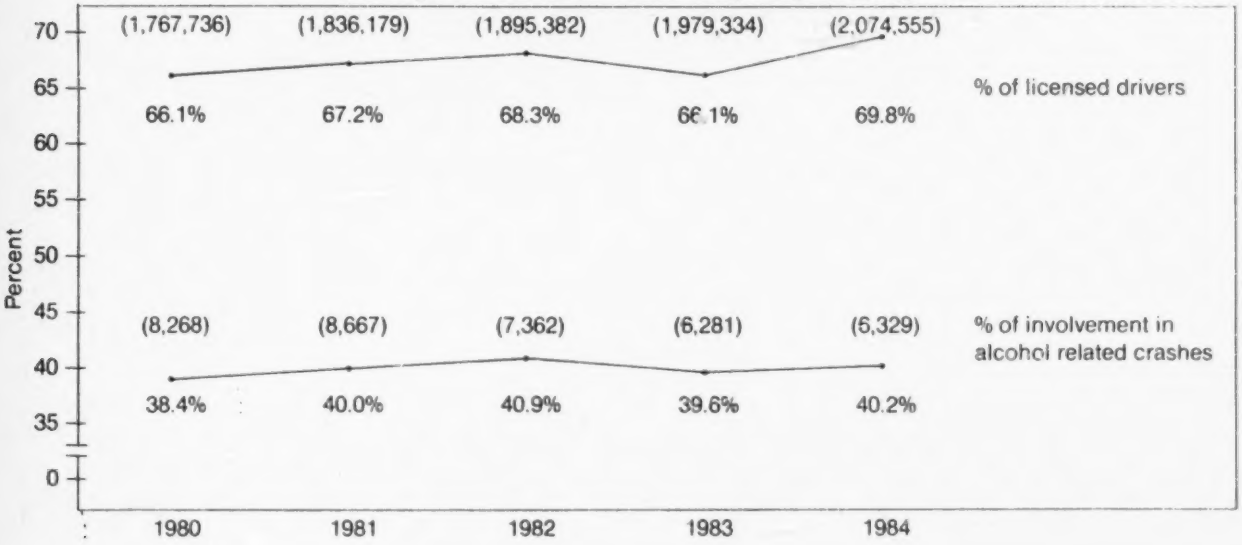


Figure 2-8 **25 - 29 Year Old Involvement in Alcohol Related Crashes as a Percentage of all Licensed Drivers Comprising the Group.**



1.39	1.38	1.41	1.45	1.45	Over-involvement of alcohol related crashes compared to % of licensed drivers in population

Figure 2-9 **30 Year Old and Older Involvement in Alcohol Related Crashes as a Percentage of All Licensed Drivers Comprising the Group**



.58	.60	.60	.60	.58	Under-involvement in alcohol related collisions compared to % of licensed drivers in the population

Weekend Alcohol Involvement

In 1984 the percentage of alcohol-related weekend collisions occurred at a rate 1.7 times greater than all weekend collisions (Friday 6 P.M. to Sunday midnight). This was the same over-representation ratio registered for 1983 (Figure 2-10). In a further breakdown of weekend alcohol-related collisions comparing the percentage of alcohol involved collisions occurring Friday and Saturday between the hours of 8 p.m. to 3 a.m. (select time period) to the percentage of the total week's accidents occurring in this time frame, the alcohol-related collisions are 2.8 times over-represented. This remains unchanged from the previous year (Figure 2-11).

Figure 2-10 **Alcohol Involvement in Weekend Collisions Compared to the Percentage of all Weekend Collisions**

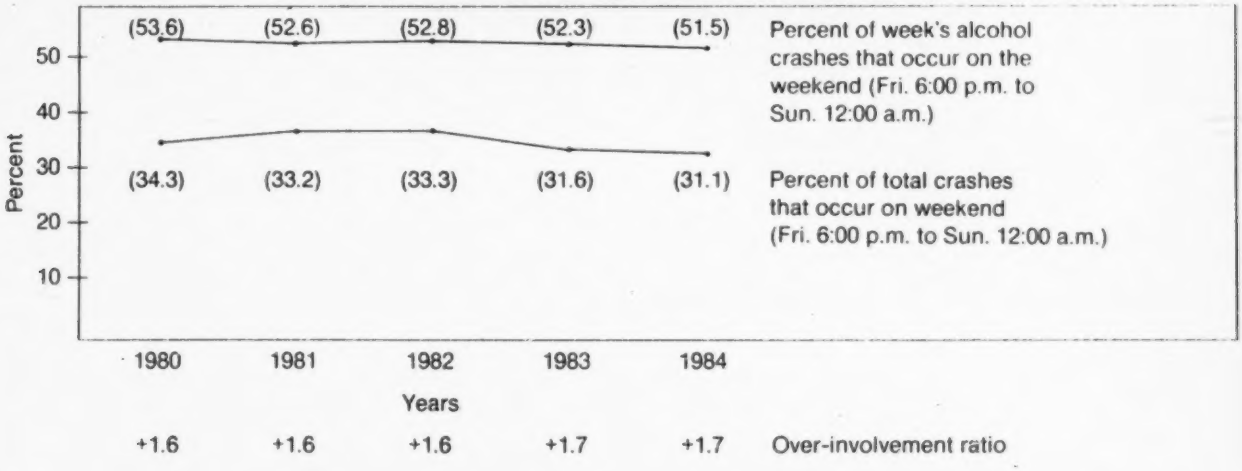
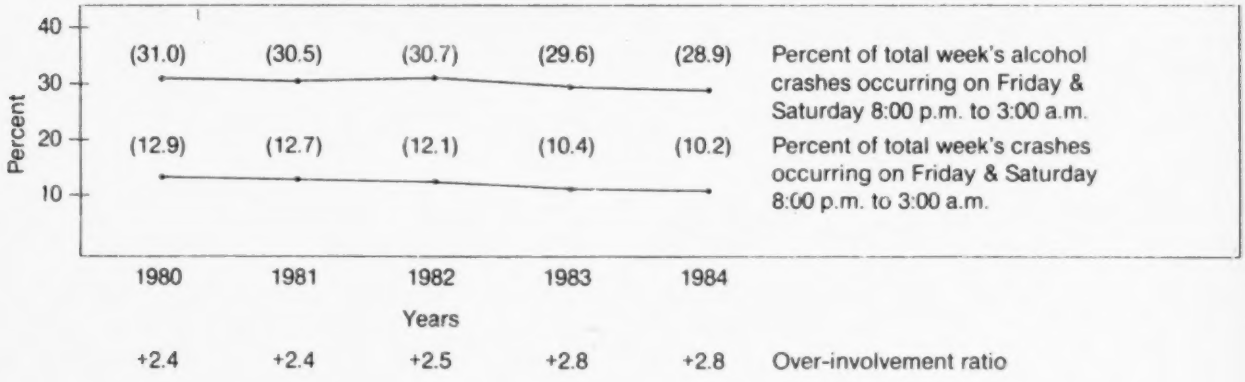


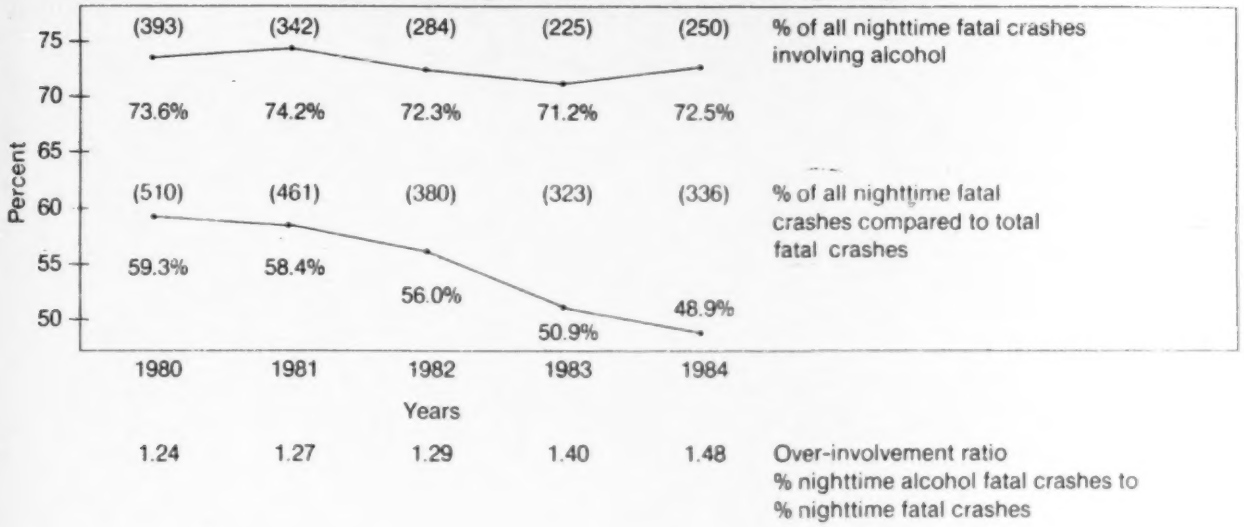
Figure 2-11 **Alcohol Involved Collisions Occurring in the Select Time Period (Friday and Saturday Between 8 P.M. and 3 A.M.) to the Percentage This Time Period Contributes to the Total Week's Collisions**



FATAL ALCOHOL INVOLVED CRASHES OCCURRING AT NIGHT

The number of all nighttime fatal crashes involving alcohol expressed as a percentage of all nighttime fatal accidents has remained relatively stable over the past five years. All nighttime fatal accidents in 1984 comprised 48.9% of the year's total fatal crashes. In 1984 alcohol-related fatal accidents at night were over-represented when compared to all nighttime fatal crashes by a ratio of 1.48, which continues a steady upward trend from 1980 (Figure 2-12).

Figure 2-12 **Fatal Alcohol Involved Crashes Occurring at Night Compared to the Percentage of All Fatal Crashes Occurring at Night.**

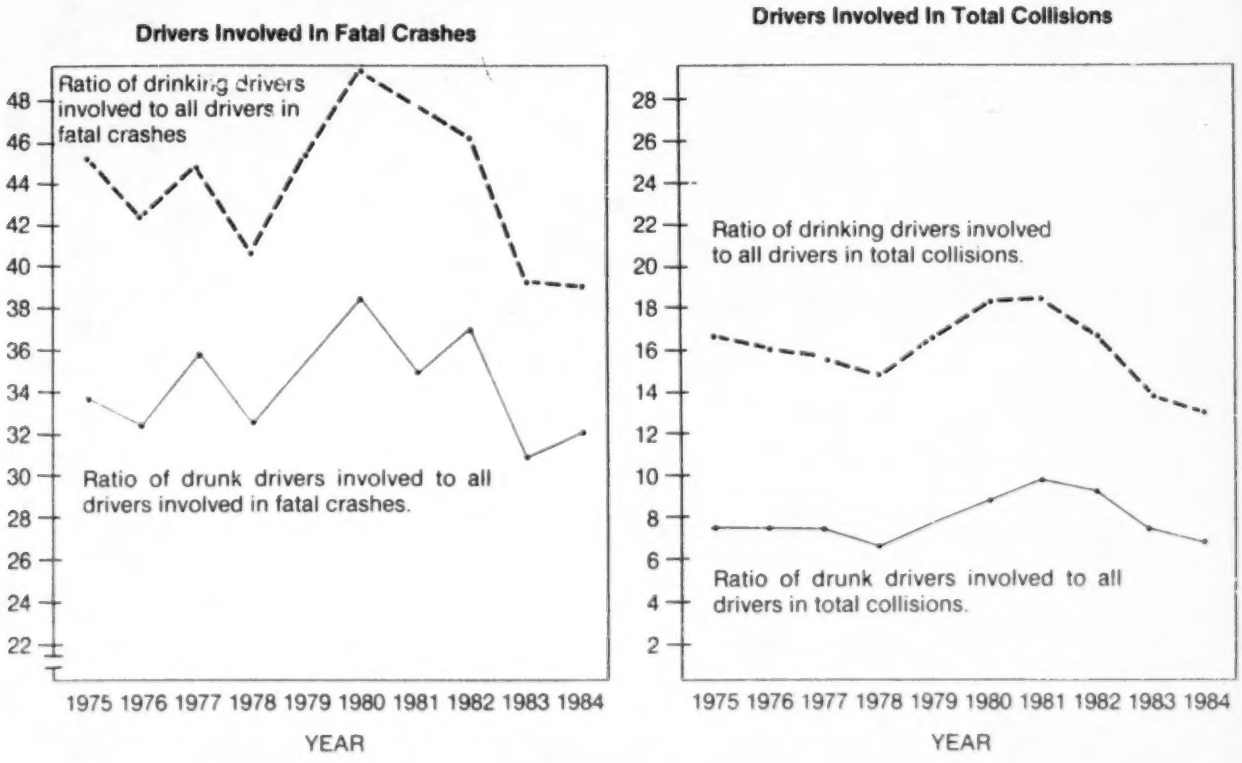


1.24	1.27	1.29	1.40	1.48	Over-involvement ratio % nighttime alcohol fatal crashes to % nighttime fatal crashes

RATIO OF DRINKING AND DRUNK DRIVERS INVOLVED IN TRAFFIC COLLISIONS

Slightly over 39% of all drivers involved in fatal collisions in 1984 had been drinking prior to the crash. This marked the fourth consecutive year of decline in this category following 1980's 49.4% high (Figure 2-13). A little more than 13% of the drivers involved in all investigated accidents had been drinking prior to the collision. The 1984 drinking driver total of 17,300 represents a 16.8% decline from the previous four-year average (Figure 2-14).

Figure 2-13 **Ratio of Drinking and Drunk Drivers Involved In Traffic Collisions 1975 - 1984** **Figure 2-14**



The total frequency of particular blood alcohol concentration (BAC) levels in fatal and serious injury collisions from 1980 through 1984 by age groups is presented in Table 2-2. The 16-19 and 20-24 age groups evidenced the greatest incidence of involvement for .00-.15 BAC levels. At the .16-.20 BAC range, the 20-24 age groups had the greatest frequency of occurrences. Overall, the 16-19, 20-24, and 25-29 age groups display the highest incidence of involvement at all BAC levels.

Table 2-2 **Chemical Test for Intoxication in Fatal and Serious Injury Collisions for 1980, '81, '82, '83, '84**

Age	.00-.05	.06-.10	.11-.15	.16-.20	.21-.25	.26-.30	.31 & Up	Test Given No Results	Test Refused	Total Tested
16-19	191	543	1,049	713	193	31	9	151	194	3,074
20-24	118	464	1,061	984	360	70	18	175	403	3,653
25-29	103	300	846	839	384	100	30	144	414	3,160
30-34	59	194	504	600	311	103	27	83	336	2,217
35-39	32	94	315	367	198	73	17	69	245	1,410
40-44	28	64	216	274	150	50	26	39	131	978
45-49	15	36	138	215	141	41	10	28	121	745
50-54	21	36	144	182	107	43	8	20	60	621
55-59	14	41	98	133	85	26	12	15	56	480
60-64	15	31	78	118	49	15	9	14	35	364
65-69	10	17	65	53	22	3	0	12	16	198
Over 69	13	15	43	41	16	7	0	6	11	152
TOTAL	619	1,835	4,557	4,519	2,016	562	166	756	2,022	17,052

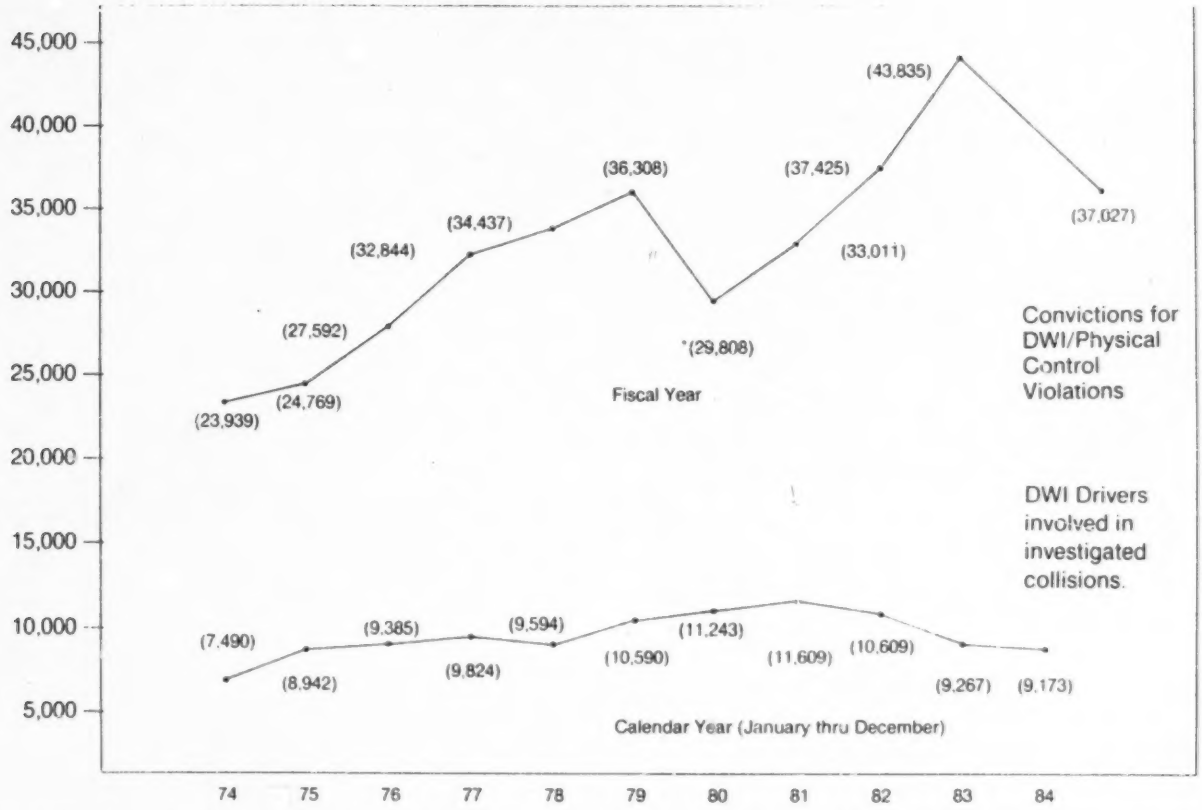
An analysis of roadway type by day of week on which alcohol-involved fatal and serious injury collisions occurred is given in Table 2-3. County roads accounted for 33.5% of the total weekly collisions compared to 30.5% for city streets. U.S. and state routes totaled 25.5% while the interstates and full-control access roads together contributed 9.6% of the weekly total of fatal and serious alcohol-involved accidents during this period of time. The table also reveals that during 1984, Saturday was the weekday with the greatest frequency of fatal and serious injury accidents involving alcohol.

Table 2-3 **Fatal and Serious Injury Collisions Involving Alcohol — 1984 Roadway Type by Day of Week**

Roadway Type	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Row Total	Percentage of Total Weekly Collisions	Percentage of Previous 4 Year Average
County Roads	213	197	229	247	345	541	441	2,213	33.5%	33.2%
City Streets	210	190	242	242	292	487	355	2,018	30.5%	30.3%
U.S. & State Routes	169	146	167	183	280	419	322	1,686	25.5%	26.2%
Interstate & Full Control	54	57	78	81	75	169	121	635	9.6%	9.5%
Other Routes	2	1	7	4	10	22	15	61	0.9%	0.8%
TOTAL	648	591	723	757	1,002	1,638	1,254	6,613	100.0%	100.0%
Percent - 1984	9.8%	8.9%	10.9%	11.4%	15.2%	24.8%	19.0%	100.0%		
Percent - Previous 4 Year Average	8.8%	9.3%	10.1%	11.2%	16.1%	25.6%	18.9%	100.0%		

In 1984 the number of convictions for alcohol-related traffic offenses declined for the first time since 1980. The 37,027 convictions in 1984 for DWI/Physical Control violations represented a drop of 6,808 convictions from the record high year of 1983. In 1984 the number of DWI drivers involved in investigated collisions declined to 9,173, the third straight year the numbers in this category have dropped (Figure 2-15).

Figure 2-15 **Comparison of Convictions for DWI/Physical Control Violations and DWI Drivers Involved In Investigated Collisions 1974 - 1984**



*Convictions for physical control of vehicle while under the influence decreased from 10,520 in FY 1979 to 1,866 convictions in FY 1980. DWI convictions increased from 25,788 in FY 1979 to 27,942 in FY 1980.

Data for accident involvement by driver's age and percent of vehicle miles traveled for each age group reveal that the 16-17 year olds have the greatest over-representation in all reported accidents at 3.43:1. The 18-year-olds were the second most over-represented group. The age group with the greatest under-representation based on miles traveled was the 45-54 category. Those in the 21-year-old bracket displayed the greatest over-representation in alcohol-related collisions based on miles traveled. Second in this ranking was the 16-17 year old group. Two age groupings, the 45-54 and 55-64, tied at 41:1 each for the greatest under-representation in alcohol-involved accidents (Table 2-4).

Table 2-4

Comparison of Miles Traveled
All Reported Accidents & Alcohol Involved Accidents
By Age of Driver — 1984

Driver Age	Percent of Vehicle Miles Traveled*	Percent of All Accident Drivers**	Over/Under Representation Ratio	Percent of All Alcohol Involved Accidents	Over/Under Representation Ratio
16-17	1.95	6.68	3.43:1	4.28	2.19:1
18	1.97	4.19	2.13:1	4.05	2.06:1
19	2.31	4.09	1.77:1	4.59	1.99:1
20	2.74	4.10	1.50:1	4.99	1.82:1
21	2.31	3.93	1.70:1	6.02	2.61:1
22-24	8.38	10.57	1.26:1	14.80	1.77:1
25-34	27.40	26.78	.98:1	31.54	1.15:1
35-44	19.48	16.56	.85:1	15.15	.78:1
45-54	17.53	8.88	.51:1	7.18	.41:1
55-64	10.73	7.09	.66:1	4.45	.41:1
65 & Over	5.10	6.74	1.32:1	2.64	.52:1

*Source — National Accident Sampling System (NASS) — 1979-1980
**Source — Accident Records Unit — Washington State Patrol

Table 2-5 presents a summary of the number of persons killed and injured, number of property damage accidents, and total investigated accidents for drivers under the influence, all drinking drivers, and non-drinking drivers. All categories of non-drinking driver collisions showed increases over 1983 with the exception of "Disabling Injury," which showed a drop of 4.2%. In contrast drivers under the influence showed slight decreases in "Disabling Injury," "Property Damage Accidents," and "Total Reported Accidents."

Table 2-6 displays the number of persons killed and injured by drivers "under the influence" and "who had been drinking" by months for 1982, 1983, and 1984. The summer months typically show a higher incidence of persons killed or injured for both categories of alcohol-involved drivers.

Table 2-5 **Summary of Persons Killed and Injured in Alcohol Related Collisions 1982 - 1983 - 1984**

	Drivers Under the Influence				All Drivers Who Had Been Drinking (HBD) (including DUI)				Non-Drinking Driver Collisions		
	1982	1983	1984	% of Change 84-83	1982	1983	1984	% of Change 84-83	1983	1984	% of Change 84-83
Persons Killed	366	299	331	+10.7%	442	364	386	+6.0%	341	375	+10.0%
Persons Injured	8,202	7,446	7,517	*	14,491	12,909	13,118	+1.6%	45,408	48,248	+ 6.2%
Disabling Injury	1,795	1,667	1,666	*	3,018	2,634	2,733	+3.8%	5,766	5,521	- 4.2%
Non-Disabling Injury	4,017	3,616	3,674	+ 1.6%	7,035	6,260	6,332	+1.1%	17,678	18,501	+ 4.7%
Possible Injury	2,390	2,163	2,177	*	4,438	4,015	4,053	*	21,964	24,226	+10.3%
Property Damage Accidents	4,713	4,114	4,019	- 2.3%	8,905	7,855	7,809	*	57,834	61,083	+ 5.6%
Total Investigated Accidents	10,292	9,207	9,101	- 1.2%	18,669	16,570	16,609	*	90,027	95,046	+ 5.6%

*Less than 1/10th of one percent.

Table 2-6 **Persons Killed and Injured in Alcohol Related Collisions By Month 1982 - 1983 - 1984**

	From Drivers "Under the Influence"						From Drivers Who "Had Been Drinking"					
	Persons Killed			Persons Injured			Persons Killed			Persons Injured		
Month	1982	1983	1984	1982	1983	1984	1982	1983	1984	1982	1983	1984
January	23	23	16	586	527	486	28	29	20	1,101	893	795
February	21	12	22	625	568	494	23	14	23	1,090	910	822
March	24	24	23	677	631	671	29	27	30	1,118	1,031	1,112
April	34	27	25	714	670	621	37	38	32	1,215	1,207	1,108
May	38	23	28	745	689	624	44	24	33	1,352	1,236	1,133
June	32	29	36	664	665	621	44	33	42	1,202	1,183	1,132
July	43	29	40	804	719	700	51	37	48	1,516	1,239	1,254
August	41	35	36	721	622	739	46	40	40	1,312	1,039	1,267
September	44	33	32	734	599	716	59	37	35	1,252	973	1,257
October	36	22	28	729	647	694	41	29	33	1,231	1,139	1,139
November	18	24	27	518	613	546	26	33	32	1,004	1,162	1,015
December	12	18	18	685	496	605	14	23	18	1,098	897	1,094
TOTALS	366	299	331	8,202	7,446	7,517	442	364	386	14,491	12,909	13,118

YOUTH INVOLVEMENT

Overview

Drivers 20 years old and under comprised 8% of all licensed drivers in the state in 1984, yet this age group was involved in 19.5% of the total 1984 collisions. This was an accident over-representation rate 2.4 times higher than the percentage of licensed drivers comprising this group. The 21-24 age group was involved in 14.5% of the total collisions while comprising 9.3% of all licensed drivers, producing an over-representation factor of 1.6. The 25-29 year old group, comprising 13% of all licensed drivers, was involved in 14.7% for an over-representation of 1.13. All other age groups were under-represented when their percentages of accident involvement were compared to their percentages of total licensed drivers (Table 3-1).

DRIVER AGE DISTRIBUTION — 1984

Table 3-1 **COMPARISON OF DRIVERS INVOLVED TO NUMBER LICENSED**

Age of Driver	Involved in Collisions Number	Involved in Collisions % of Total	Percent of Licensed Drivers	Over/Under Representation Ratio
Under 16	683	0.40	—	—
16	5,081	2.97	0.92%	3.23
17-18	13,509	7.90	3.09%	2.56
19-20	13,989	8.19	3.94%	2.08
21-22	13,047	7.63	4.45%	1.71
23-24	11,735	6.86	4.83%	1.42
25-29	25,075	14.67	13.00%	1.13
30-34	20,697	12.11	13.08%	.93
35-39	16,782	9.82	11.77%	.83
40-44	11,522	6.74	8.98%	.75
45-49	8,258	4.87	6.81%	.71
50-54	6,919	4.05	6.02%	.67
55-59	6,529	3.82	5.88%	.65
60-64	5,587	3.27	5.80%	.56
65-69	4,443	2.60	4.68%	.56
70 and over	7,071	4.14	6.75%	.61

YOUTHFUL DRIVER INVOLVEMENT IN COLLISIONS BY FIRST HARMFUL EVENT

In 1984, 72.6% of those drivers aged 24 years and younger who were involved in all collisions collided with other moving vehicles. This type of collision also resulted in the greatest percentage of fatal collisions (39.3%) and injury collisions (68.3%). Single vehicle collisions with fixed objects led to the second largest percentage of youthful driver involvement in total, fatal and injury collisions, at 16.3%, 27.5% and 18.1% respectively (Table 3-2).

Table 3-2 **YOUTHFUL DRIVERS BY FIRST EVENT — 1984**

	In Total Collisions	Percent of Total	In Fatal Collisions	Percent of Total	In Injury Collisions	Percent of Total
Collision with other moving motor vehicles	36,540	72.6%	120	39.3%	13,953	68.3%
Collision with parked vehicle	2,017	4.0%	5	1.6%	514	2.5%
Collision with fixed/ other object	8,191	16.3%	84	27.5%	3,690	18.1%
Overturning and other non-collision	2,547	5.0%	53	17.4%	1,526	7.5%
Other Collisions, including Ped., Pedal., Animal, R.R. Train	1,002	2.0%	43	14.1%	737	3.6%
TOTAL	50,297	100.0%	305	100.0%	20,420	100.0%

YOUTHFUL COLLISION INVOLVEMENT BY AGE GROUP

In 1984 the 16-20 year old age group was involved in 19.1% of all collisions. This group's over-representation ratio of 2.39 was up from the 2.30 ratio for 1983. It is also the highest over-representation ratio for any age group (Figure 3-1). The 21-24 year old age group increased its over-representation ratio from 1.5 to 1.6 (Figure 3-2). The 25-29 age group posted an over-representation ratio of 1.13, up slightly from the previous year's 1.12 (Figure 3-3). The 30 year and older age group continued to be under-represented in total collisions compared to this group's percentage of all licensed drivers (Figure 3-4).

Figure 3-1 **16-20 Year Old % Of Involvement In Total Collisions Compared to % of Licensed Drivers Comprising the Age Group**

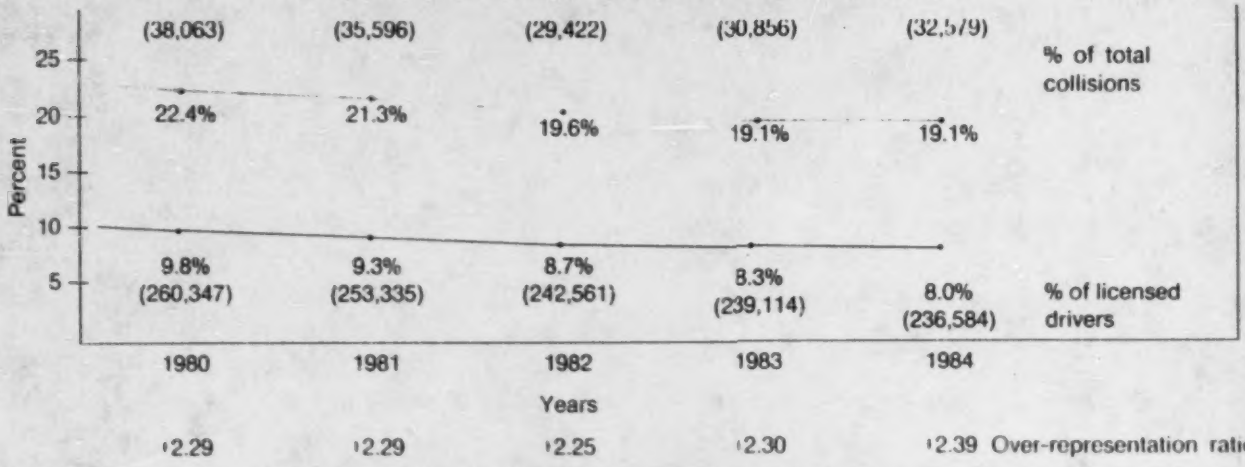


Figure 3-2 **21-24 Year Old % of Involvement in Total Collisions Compared to % of Licensed Drivers Comprising the Age Group**

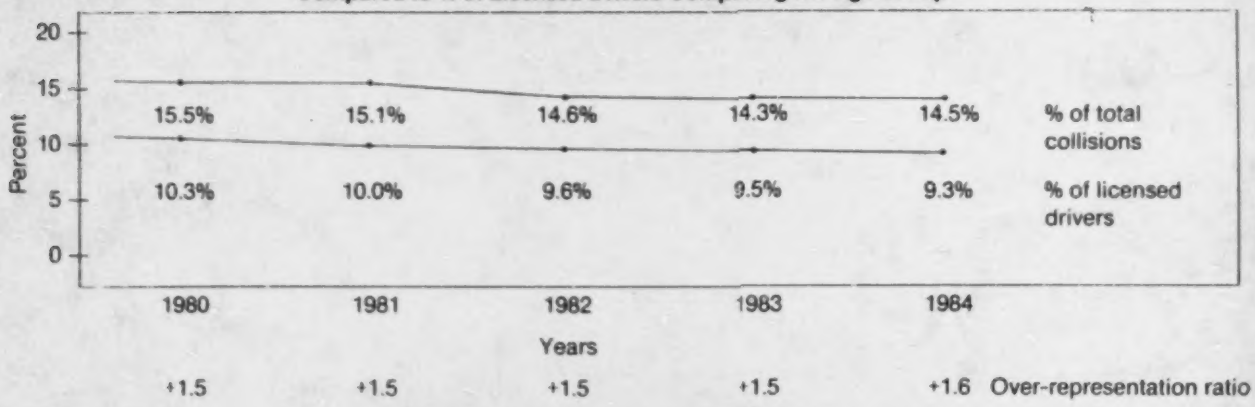


Figure 3-3 **25-29 Year Old % of Involvement in Total Collisions Compared to % of Licensed Drivers Comprising the Age Group**

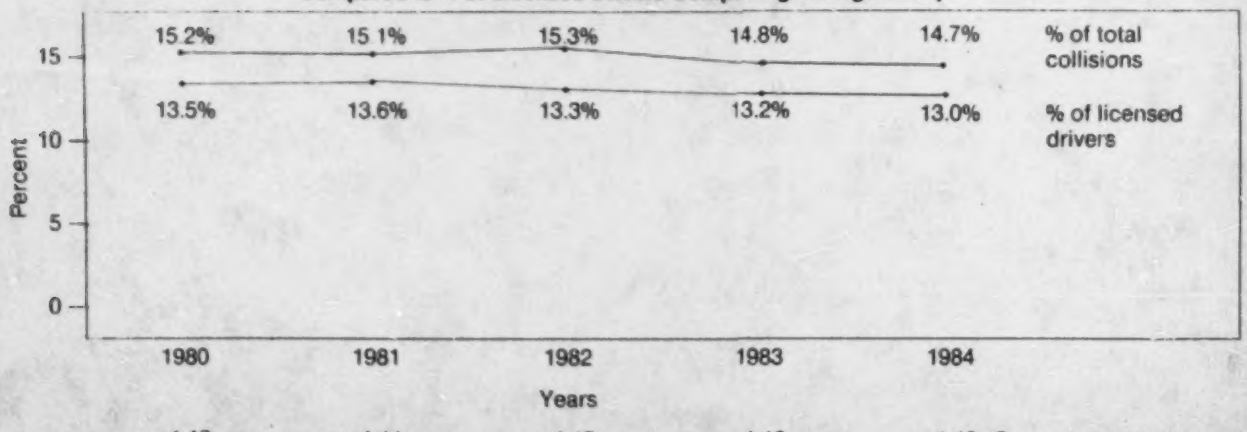
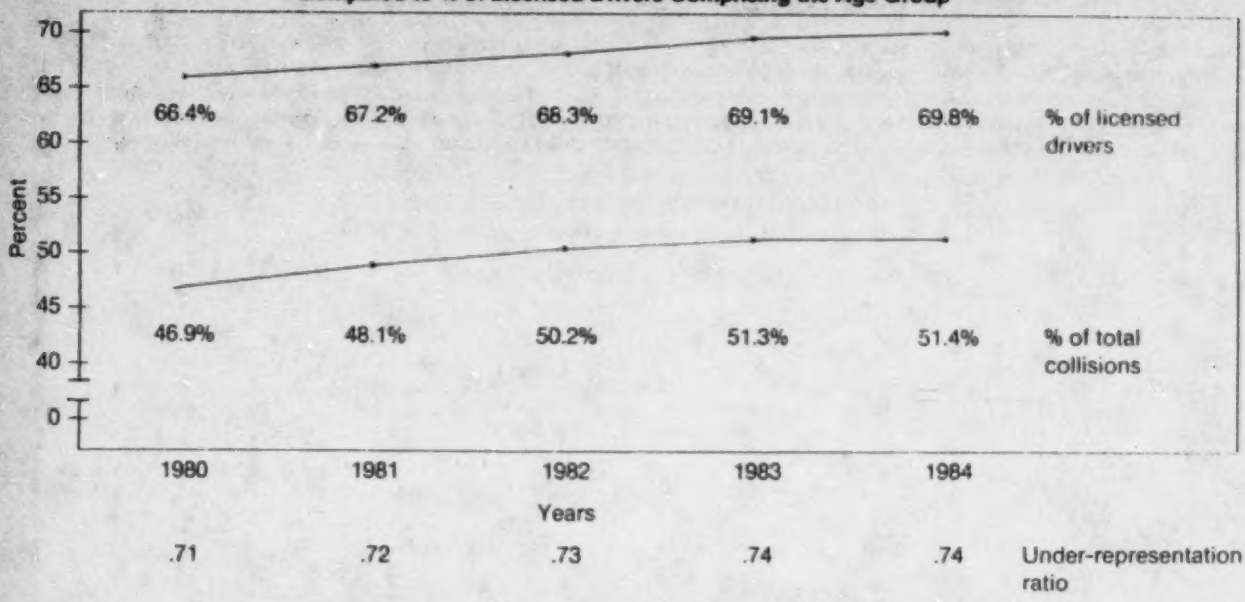


Figure 3-4

30 Years Old and Older % of Involvement in Total Collisions Compared to % of Licensed Drivers Comprising the Age Group



COLLISION SEVERITY BY AREA FOR YOUTHFUL DRIVERS

In 1984, urban collisions involving youthful drivers (24 years old and younger) increased slightly to 57.9% while rural collisions involving youthful drivers made up 42.1% of the total (Figure 3-5). In 1984, youthful driver injury collisions increased in urban areas over 1983 but declined in rural areas during the same time frame (Figure 3-6). Youthful driver fatal collisions continued to be far more common in rural areas. In 1984, 76.1% of the fatal collisions involving youthful drivers occurred in rural areas (Figure 3-7).

Figure 3-5

Youthful Drivers Involved in Total Collsions

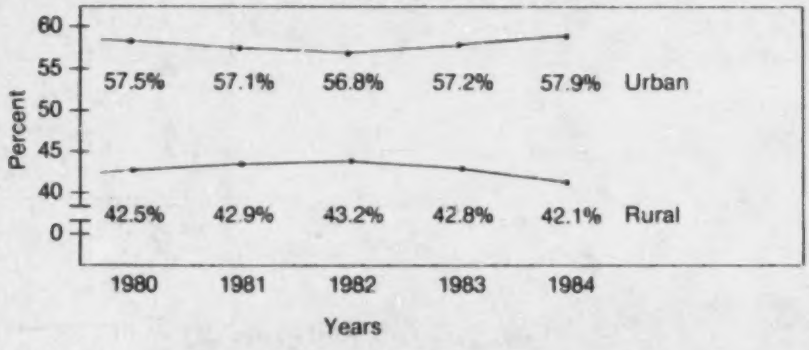


Figure 3-6

Youthful Drivers Involved in Injury Collisions

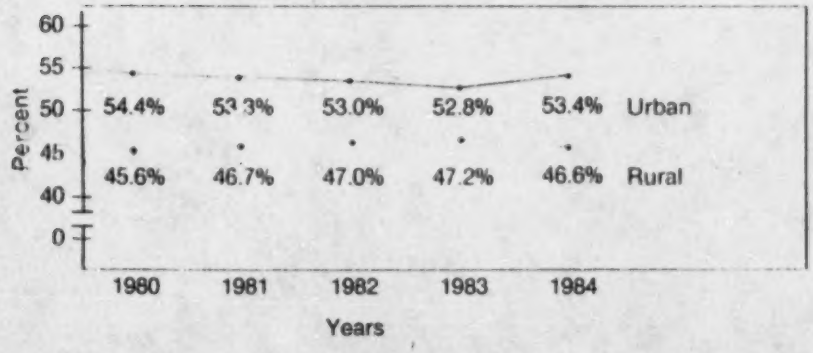
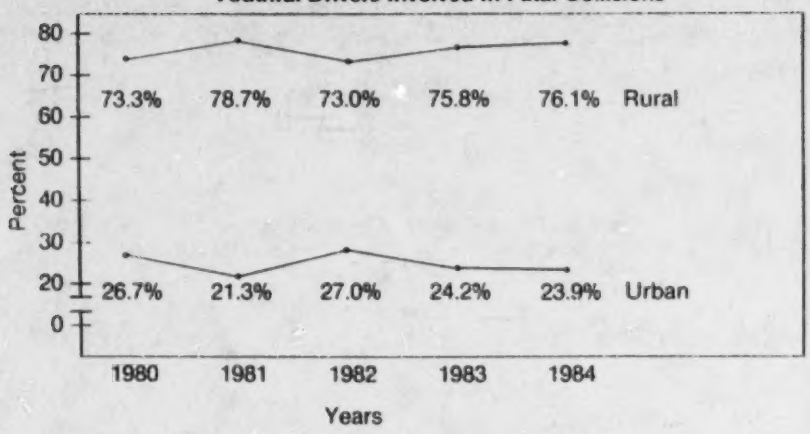


Figure 3-7

Youthful Drivers Involved In Fatal Collisions



YOUTHFUL DRIVER INVOLVEMENT BY TIME

In 1984, 20.3% of all the rural fatal collisions and 18.3% of all rural reported collisions involving youthful drivers occurred on Saturday (Figure 3-8). In urban areas, Friday had the highest occurrence of fatal collisions involving youthful drivers (19.2%). Friday also recorded the greatest percentage of total collisions (19.1%) for the group (Figure 3-9).

Figure 3-8

Youthful Drivers Involved In Rural Area
Fatal and Total Collisions — 1984 — By Day Of Week

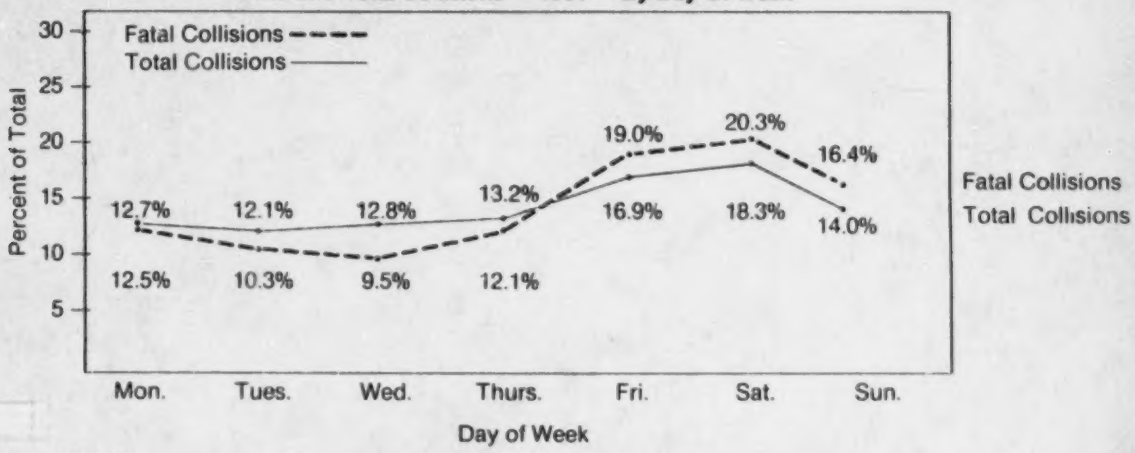
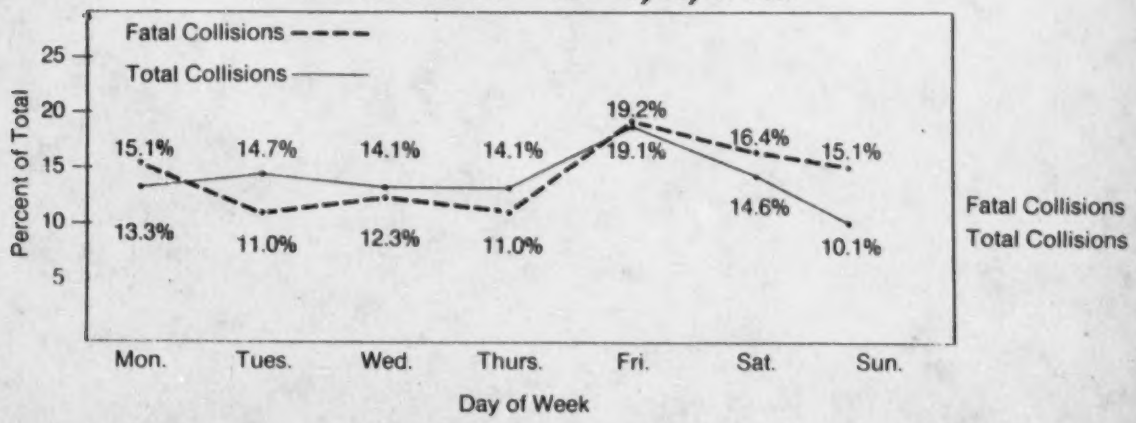


Figure 3-9

Youthful Drivers Involved In Urban Area
Fatal and Total Collisions — 1984 — By Day Of Week



In rural areas, the greatest percentage (18.5%) of youthful driver involvement in fatal crashes in 1984 occurred from 6 PM to 9 PM. The greatest percantage of total collision involvement (22.6%) for these drivers was from 3 PM to 6 PM (Figure 3-10). In the urban areas, the greatest youthful involvement by time period in fatal collisions was 24.7% in the midnight to 3 AM period. The 3 PM to 6 PM time period recorded 26.3% of the youthful drivers involved in total urban collisions (Figure 3-11).

Figure 3-10

Youthful Drivers Involved In Rural Area
Fatal and Total Collisions — 1984 — By Hour Of Day

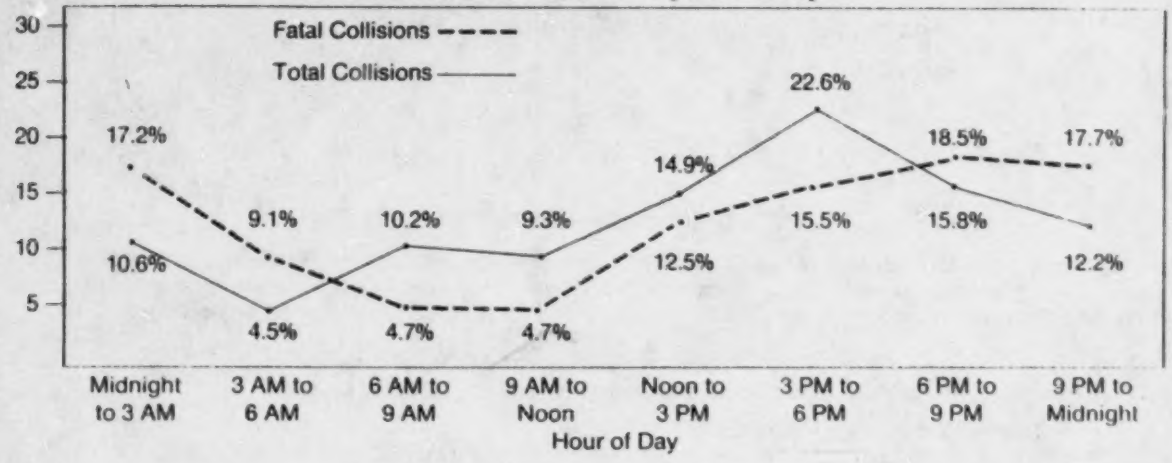
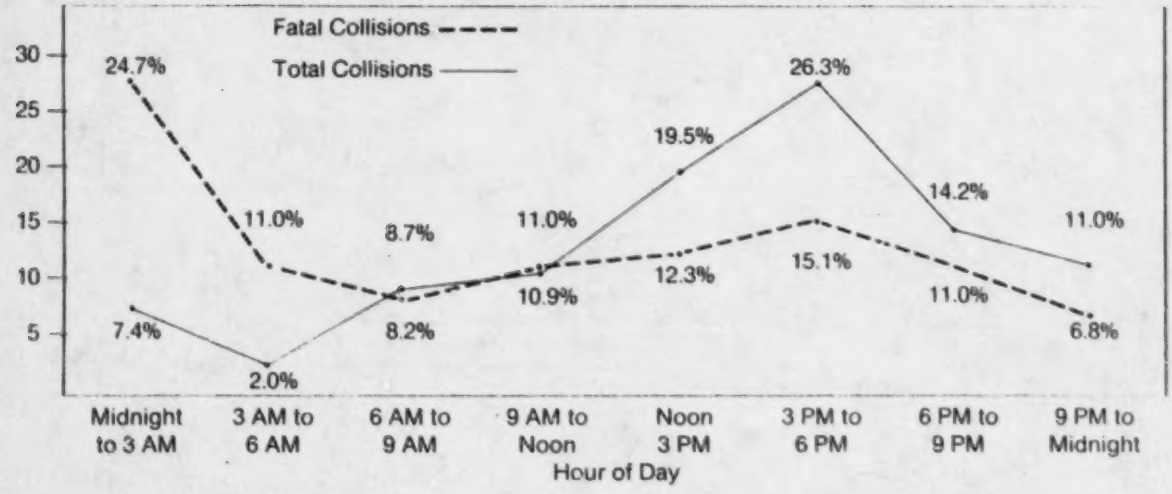


Figure 3-11

Youthful Drivers Involved In Urban Area
Fatal and Total Collisions — 1984 — By Hour Of Day



SAFETY RESTRAINT USAGE

Overview

In 1984, out of a total of 161,513 occupants involved in total collisions, 45,214 were using safety restraints. This is a usage rate of 27.9% and marks the third consecutive year of increases in safety restraint usage since 1981 (Table 4-1).

Table 4-1 **USAGE RATE**

	1984	%	1983	%	1982	%	1981	%	1980	%
Restraints Used	45,214	27.9%	31,751	21.0%	24,763	17.8%	25,190	15.9%	27,018	17.4%
No Restraints Used	116,299	72.0%	119,670	79.0%	114,686	82.2%	132,921	84.1%	128,264	82.6%
Total	161,513	100.0%	151,421	100.0%	139,449	100.0%	158,111	100.0%	155,282	100.0%

In 1984, 45,196 persons out of a total of 161,470 accident-involved occupants were using a restraining device. Child restraints were used by 1,915 collision-involved children (Table 4-2). Looking at all restraining devices by usage and non-usage categories, it appears that with the safety restraint usage, injuries were less likely to occur and those that did occur were less severe (Appendix C).

Table 4-2 **RESTRAINT USAGE AND INJURIES SUSTAINED***

	Restraints Used		Child Restraints**		No Restraints		Total Occupants	
	Number	%	Number	%	Number	%	Number	%
Deaths	50	0.11%	1	0.05%	478	0.41%	528	0.33%
Disabling Injuries	716	1.6%	9	0.5%	4,523	3.9%	5,239	3.2%
Evident Injuries	3,312	7.3%	113	5.9%	13,932	12.0%	17,255	10.7%
Possible Injuries	5,637	12.5%	141	7.4%	13,970	12.0%	19,607	12.1%
No Injuries	35,481	78.5%	1,651	86.2%	83,361	71.7%	118,841	73.7%
Totals	45,196	100.0%	1,915	100.0%	116,264	100.0%	161,470	100.0%

*Excludes cases where injury severity was not stated.
**Included with Restraints Used category

In 1984, 31.4% of the female drivers used their restraints while 27.3% of the male drivers used their restraints in collisions. Female passengers had a usage rate of 28.4% compared to 26.4% for male passengers. The 0-5 age group had the highest restraint usage of any age group at 47.3%. The age group with the lowest usage rate was the 16-19 year olds at 19.6% usage (Table 4-3).

Table 4-3 **USAGE RATES BY SEX AND AGE GROUP — 1980 - 1984**

	Percent Used Restraints				
Occupant	1984	1983	1982	1981	1980
Male Driver	27.3	22.0	19.1	17.4	19.3
Female Driver	31.4	23.6	20.0	18.2	19.9
Male Passenger	26.4	14.8	11.2	9.9	10.6
Female Passenger	28.4	18.9	15.3	12.6	13.5
Age 0-5	66.8	42.3	32.2	26.1	24.0
Age 6-15	24.9	14.8	11.5	9.6	9.7
Age 16-19	19.6	14.0	11.5	11.7	12.0
Age 20-24	22.0	16.3	14.3	13.4	14.8
Age 25-34	29.5	23.0	19.6	17.5	19.4
Age 35-64	32.0	23.3	22.2	20.3	22.3
Age 65 & Up	27.6	21.4	18.3	19.5	18.0

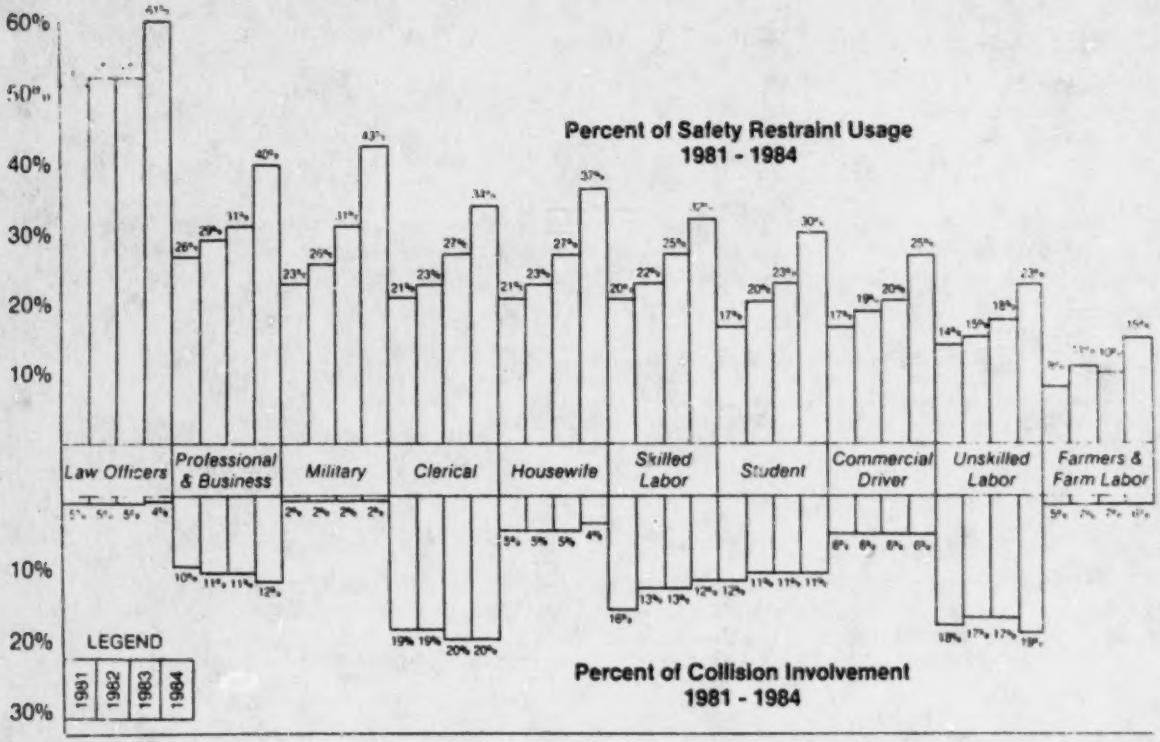
Examination of restraint usage by occupant age for 1984 reveals that the 0-1 age group had the highest usage rate at 79.1%. The lowest rate of restraint usage (14.7%) was for 14-year-old occupants (Table 4-4).

Table 4-4 **1984 SEAT BELT USAGE BY OCCUPANT AGE**

Age	Lap Belt	Shoulder Belt	Lap & Shoulder Belt	Child Retraint	Air Bag Activated	Total Restraints Used		Restraints Not Used	
						Number	% of Total	Number	% of Total
0 - 1	75	4	61	589	0	729	79.1%	193	20.9%
2	191	9	91	407	0	698	69.7%	303	30.3%
3	269	5	87	236	0	597	64.1%	334	35.9%
4	288	14	120	131	0	553	59.1%	383	40.9%
5	258	6	90	57	0	411	51.7%	384	48.3%
6	190	4	101	20	0	315	44.1%	400	55.9%
7	152	12	67	7	0	238	36.8%	408	63.2%
8	114	4	69	4	0	191	31.9%	407	68.1%
9	93	3	65	3	0	164	30.5%	373	69.5%
10	69	4	62	0	0	135	24.5%	417	75.5%
11	91	6	45	0	0	142	26.0%	404	74.0%
12	95	9	69	0	0	173	25.7%	500	74.3%
13	72	5	83	0	0	160	19.4%	663	80.6%
14	78	9	82	0	0	169	14.7%	977	85.3%
15	156	16	181	0	0	353	17.2%	1,694	82.8%
16	493	66	750	0	1	1,310	21.9%	4,675	78.1%
17	541	74	646	0	0	1,261	19.0%	5,390	81.0%
18	574	60	702	0	2	1,338	18.7%	5,824	81.3%
19	490	62	707	0	0	1,259	18.9%	5,420	81.1%
20	508	62	687	0	0	1,257	19.3%	5,266	80.7%
21 - 24	1,775	252	2,945	0	1	4,973	22.6%	17,040	77.4%
25 - 29	1,783	310	3,679	0	2	5,774	28.2%	14,735	71.8%
30 - 64	5,898	1,041	11,622	0	10	18,571	31.7%	40,088	68.3%
65 & Over	1,093	160	1,583	0	2	2,838	29.2%	6,867	70.8%
Age Unknown	228	28	325	440	1	1,022	30.6%	2,317	69.4%
TOTAL	15,574	2,225	24,919	1,894	19	44,631	27.9%	115,462	72.1%

The usage rate of safety restraints by occupation of driver ranges from a high of 61% for law officers to a low of 15% for farmers and/or farm labor. Usage rates for all occupations showed increases in 1984 over the rates for the preceding three years (Figure 4-1).

Figure 4-1 **Collision Involvement and Safety Restraint Usage By Driver Occupation 1981 - 1984**



Freeway travel (interstates and other controlled access routes) had the highest usage rate by vehicle occupants at 41% Occupants of vehicles traveling on county roads had the lowest recorded usage rate at 24.3% (Table 4-5).

Table 4-5 **RESTRAINT USAGE BY FUNCTIONAL CLASS OF ROADWAY BY YEAR**

Functional Class	1984	1983	1982	1981	1980
Interstate and limited access	41.0%	27.4%	29.0%	25.3%	29.4%
Other state routes	28.9%	21.1%	17.8%	16.2%	21.4%
County roads	24.3%	17.7%	15.0%	13.7%	18.7%
City streets	26.4%	20.1%	16.3%	14.9%	21.4%
All others	24.8%	19.8%	16.6%	16.6%	21.3%

Examination of safety restraint usage by vehicle type reveals substantial increases in usage rates for all types of vehicle. The lowest usage rate (20.1%) in 1984 was recorded for those in heavy trucks (Table 4-6).

Table 4-6 **SEAT BELT USAGE RATE BY TYPE OF VEHICLE DRIVERS 1980 - 1984**

Type of Vehicle	1984	1983	1982	1981	1980
Passenger car	29.8%	22.4%	19.0%	17.2%	22.8%
Light trucks (under 10,000 gross)	22.2%	16.2%	13.0%	11.2%	16.1%
Heavy trucks (10,000 gross & over)	20.1%	16.0%	15.2%	13.9%	18.4%
All others	30.9%	21.5%	22.1%	15.0%	23.0%

In 1984, 68.3% of the occupants were using safety restraints in all state registered vehicles involved in collisions. This is up 8.3% from the preceding year. The next highest usage rate was the 58.6% reported for "Other government (federal agency) registered vehicles." The lowest usage rate for 1984 was the 41.4% reported for municipal registered vehicles (Table 4-7).

Table 4-7 **SEAT BELT USAGE RATE BY TYPE OF GOVERNMENT VEHICLES**
1980 - 1984

Type of Government Vehicle	1984	1983	1982	1981	1980
State registered vehicles	68.3%	60.0%	65.0%	65.0%	46.0%
County registered vehicles	43.6%	32.3%	37.3%	30.1%	39.7%
Municipal registered vehicles	41.4%	35.1%	28.1%	27.7%	30.9%
Other government registered vehicles	58.6%	54.2%	44.4%	39.2%	50.0%

Drivers residing within 15 miles of their accident scenes recorded the lowest seat belt usage rate in 1984. Just 28.2% in this category were using restraints. Out-of-state drivers continued to use restraints at the highest rate, 35.1%. All categories continued to record increases in restraint usage rates over previous years (Table 4-8).

Table 4-8 **SEAT BELT USAGE RATE BY PROXIMITY OF DRIVER RESIDENCE**
1980 - 1984

Residence Proximity	1984	1983	1982	1981	1980
Resided within 15 miles of collision	28.2%	22.1%	18.9%	17.3%	23.7%
Resided over 15 miles	31.1%	23.7%	21.2%	19.3%	24.3%
Residing in other state	35.1%	28.6%	24.4%	22.4%	29.3%

An examination of restraint usage by seat position in 1984 reveals that occupants in the left back and right back positions were the most frequent restraint users at 36.5% and 34.6%, respectively. These positions include the greatest usage of child restraints. Drivers were the next most frequent users at 28.6%. Seat position occupants showing the least usage of restraints were those riding in the mid-front, where 17.1% were reported using restraints (Table 4-9).

Table 4-9 **RESTRAINT USAGE BY OCCUPANT SEAT POSITION**

Occupants	1984	1983	1982	1981	1980
Driver	28.6%	22.5%	19.3%	17.7%	24.0%
Mid-front	17.1%	10.6%	7.6%	7.2%	9.6%
Right-front	24.6%	17.0%	14.3%	12.4%	17.0%
Left-back	36.5%	22.2%	16.4%	12.6%	14.3%
Mid-back	25.7%	14.9%	11.0%	7.7%	10.8%
Right-back	34.6%	21.9%	16.2%	12.4%	14.4%
Other	13.0%	4.8%	3.8%	2.7%	2.6%
TOTAL	27.9%	21.0%	17.8%	16.0%	21.5%

Table 4-10 presents 1984 restraint usage by occupant age and seat position. The left-back and right-back for the 0-4 age group had the highest reported usage at 79.8% and 78.8%, respectively. For the 5-9 age group, the most frequent safety restraint usage also occurred in the left-back (48.8%) and right-back (47.0%) seat positions. The positions with the lowest reported usage rates for the 15-20 age group were the mid-front and mid-back seats—4.8% and 5.9%. This also held true for the 21-24 age group. The driver continued to "buckle up" more than any other occupant for those aged 15 through 64. The mid-front occupant was the most frequent restraint user at 37.7% in the 65 and over age category.

Table 4-10 RESTRAINT USAGE BY OCCUPANT AGE AND SEAT POSITION 1984

Seat Position	0 - 4	5 - 9	10-14	15-20	21-24	25-29	30-64	65 & Over
Driver	—	—	—	22.1%	24.9%	30.2%	32.6%	28.9%
Mid-front	52.0%	31.0%	11.5%	4.8%	6.4%	7.7%	9.7%	37.7%
Right-front	64.6%	41.0%	22.6%	14.4%	17.1%	23.0%	28.8%	31.5%
Left-back	79.8%	48.8%	27.0%	13.7%	9.3%	16.8%	20.2%	29.1%
Mid-back	38.5%	35.5%	9.9%	5.9%	6.4%	9.8%	10.1%	20.0%
Right-back	78.8%	47.0%	25.7%	15.1%	12.6%	16.6%	21.5%	25.2%
Other	32.1%	15.9%	2.3%	6.1%	8.1%	5.0%	6.9%	0
Seat Location Unknown	50.0%	23.6%	10.1%	7.8%	7.5%	9.3%	12.7%	22.2%

A more detailed breakdown of types of restraints used by injury severity is presented for 1984 in Table 4-11. Of 528 occupants killed in vehicle crashes, 478 (90.6%) were not using restraints. Of the 5,203 persons sustaining disabling injuries by collisions, 86.4% were using no restraints.

Table 4-11 TYPES OF RESTRAINTS USED BY SEVERITY OF INJURY — 1984

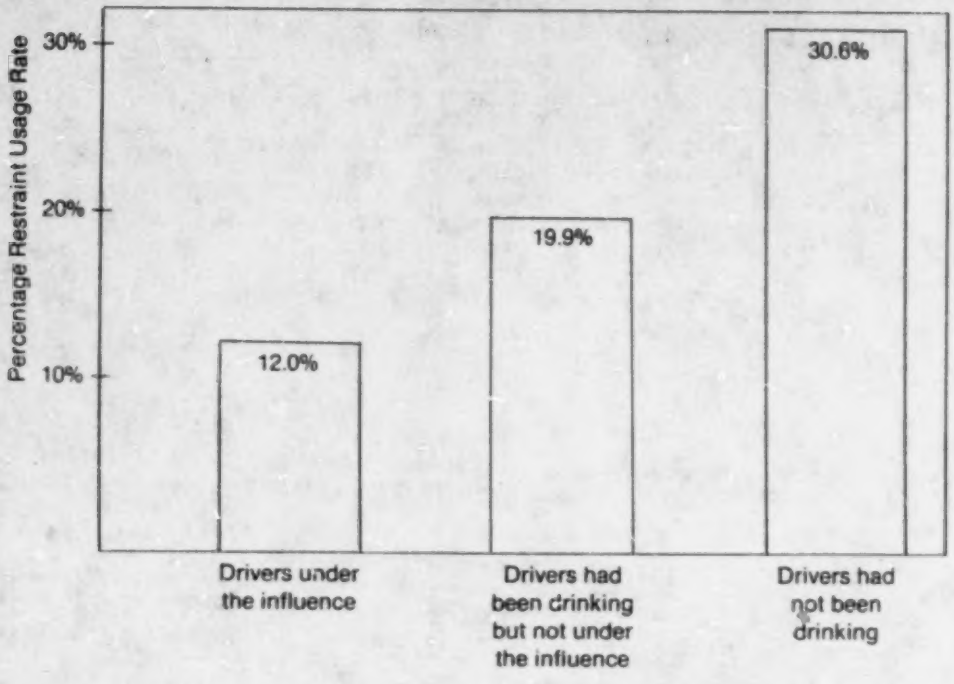
	Number Used		Deaths		Disabling Inj.		Evident Injury		Possible Injury		No Injury	
Type	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Lap Belt	15,569	9.7	16	3.0	253	4.9	1,203	7.0	1,682	8.7	12,415	10.5
Shoulder Belt	2,222	1.4	2	0.4	23	0.4	176	1.0	293	1.5	1,728	1.5
Lap & Shoulder Belt	24,910	15.6	31	5.8	422	8.1	1,797	10.5	3,439	17.7	19,221	16.3
Child Restraint	1,893	1.2	1	0.2	9	0.2	110	0.6	141	0.7	1,632	1.4
Air Bag (Activated)	19	*	0	0.0	1	*	0	0.0	3	*	15	*
No Restraints	115,425	72.1	478	90.6	4,495	86.4	13,837	80.9	13,858	71.4	82,757	70.3
Total Occupants	160,038	100.0	528	100.0	5,203	100.0	17,123	100.0	19,416	100.0	117,768	100.0

*Less Than 1/10 of 1 percent.

Of all collision-involved drivers in 1984, those who had been drinking displayed a greater tendency not to use restraints than those drivers who had not been drinking. The latter category revealed a restraint-usage rate of 30.6% compared to a usage rate of 12% for drivers under the influence and 19.9% for drivers who had been drinking but were not under the influence (Figure 4-2).

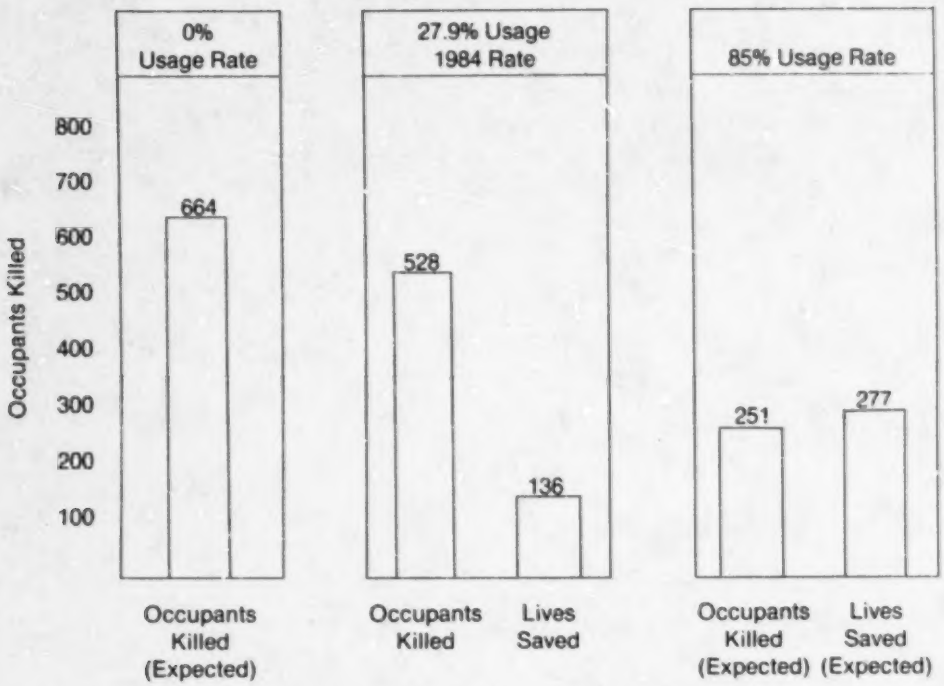
Figure 4-2

Restraint Usage By Sobriety



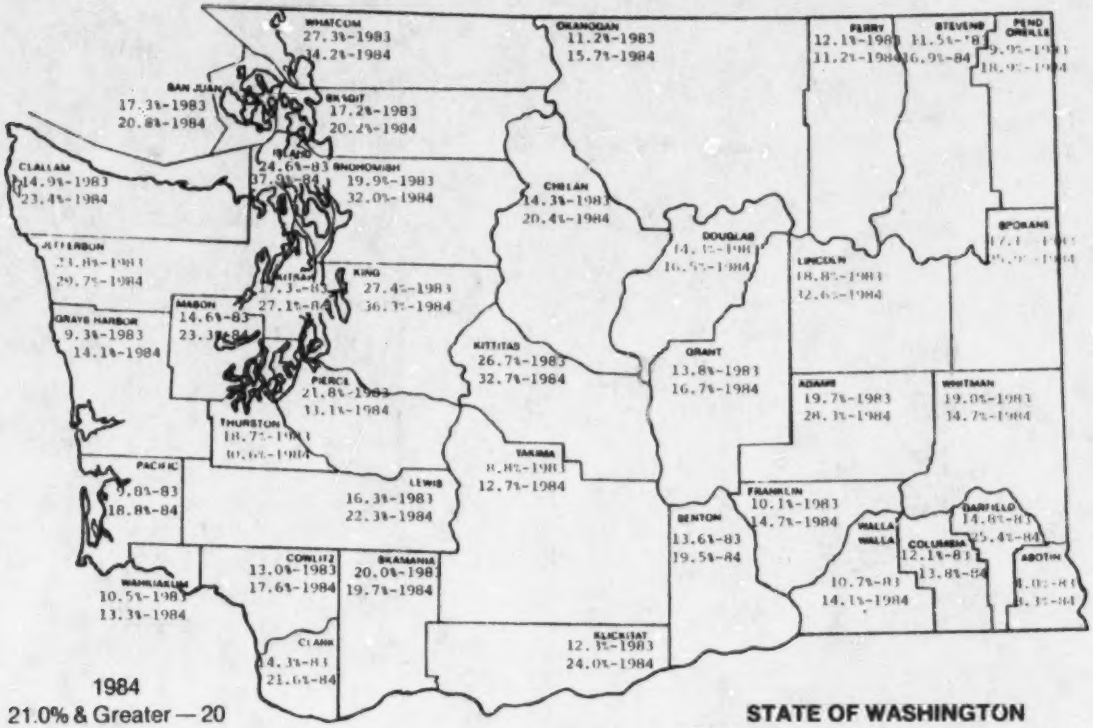
From the data obtained for restraint usage and number of fatalities in 1984, it is possible to project the number of fatalities that would have occurred under varying restraint usage rates (Figure 4-3). As shown in the middle block, occupant restraint devices were used by 27.9% of the occupants involved in collisions. At this usage rate, there were 528 fatalities. Based on this information, it is estimated that 136 lives were saved by restraint usage. The block to the left presents the situation that could have been expected to exist if no restraints were used. Assuming that the usage rate among vehicle occupants could be brought up to the 85% level, it is projected that there would have been 251 fatalities and 277 lives would have been saved. From these computations, it appears that the higher the usage rate, the greater the savings in lives. (See Appendix C for computation).

Figure 4-3 **Occupant Restraints Usage in Fatal Crashes**



A graphic depiction of restraint use by county is presented in Figure 4-4. Island County at 37.9% had the highest usage rate of all counties in the state in 1984. King County had the next highest usage rate at 36.3%. The county with the lowest usage rate was Asotin County at 8.3%.

Figure 4-4 **Seat Restraint Usage Rate By County — 1983/84**



1984
21.0% & Greater — 20
15.0% — 20.9% — 12
14.9% & Under — 7

STATE OF WASHINGTON
STATEWIDE USAGE RATE 21.0%-1983
29.7%-1984

MOTORCYCLE COLLISIONS

Overview

In 1984 motorcycle fatal, injury and total collisions decreased 31%, 3.3%, and 3% respectively, when compared to the previous 4-year baseline average. Registration in 1984 totaled 126,703 motorcycles, a decrease of 5.3% over the baseline period. The motorcycle collision rate of 2.74 for 1984 was up 2.2% over the baseline rate of 2.68 motorcycle collisions per every 100 registered (Table 5-1).

Table 5-1 **MOTORCYCLE COLLISIONS 1980 — 1984**

	1980	1981	1982	1983	Previous 4 Year Average	1984	Change 84-4 Yr. Average
Total Collisions	3,914	3,728	3,376	3,312	3,583	3,477	- 3.0%
Fatal Collisions	116	104	103	77	100	69	-31.0%
Fatal Collisions Ratio (Fatal Collisions per 1,000 motorcycle coll.)	29.6	27.9	30.9	23.2	27.9	19.8	-29.0%
Fatal Registration Rate (Fatal Collisions per 1,000 motorcycles reg.)	.854	.743	.782	.570	.747	.545	-27.0%
Injury Collisions	3,373	3,186	2,867	2,839	3,066	2,965	- 3.3%
Motorcycle Registration	135,899	139,931	131,667	127,950	133,862	126,703	- 5.3%
Total Collision Registration Rate (Motorcycle involved per 100 registered)	2.88	2.66	2.56	2.59	2.68	2.74	+ 2.2%

MOTORCYCLE COLLISIONS BY LOCATION

Table 5-2 displays a breakdown of motorcycle collision data by totals for urban and rural areas as well as the state as a whole for 1984 and 1983. In 1984 rural areas again led urban areas in the total number of fatal collisions, 45 to 24, while urban areas led rural areas in total number of injury collisions, 1,594 to 1,371.

Table 5-2 **MOTORCYCLE COLLISION DATA**

	1984			1983		
	Urban	Rural	Statewide	Urban	Rural	Statewide
Total Collisions	1,920	1,557	3,477	1,752	1,560	3,312
Fatal Collisions	24	45	69	30	47	77
Total Fatalities	25	50	75	30	47	77
Injury Collisions	1,594	1,371	2,965	1,475	1,364	2,839
Property Damage Only, Collisions	302	141	443	247	149	396
All Persons Injured	1,935	1,721	3,656	1,815	1,740	3,555
Motorcyclists Killed	23	49	72	30	47	77
Motorcyclists Injured	1,806	1,628	3,434	1,704	1,647	3,351

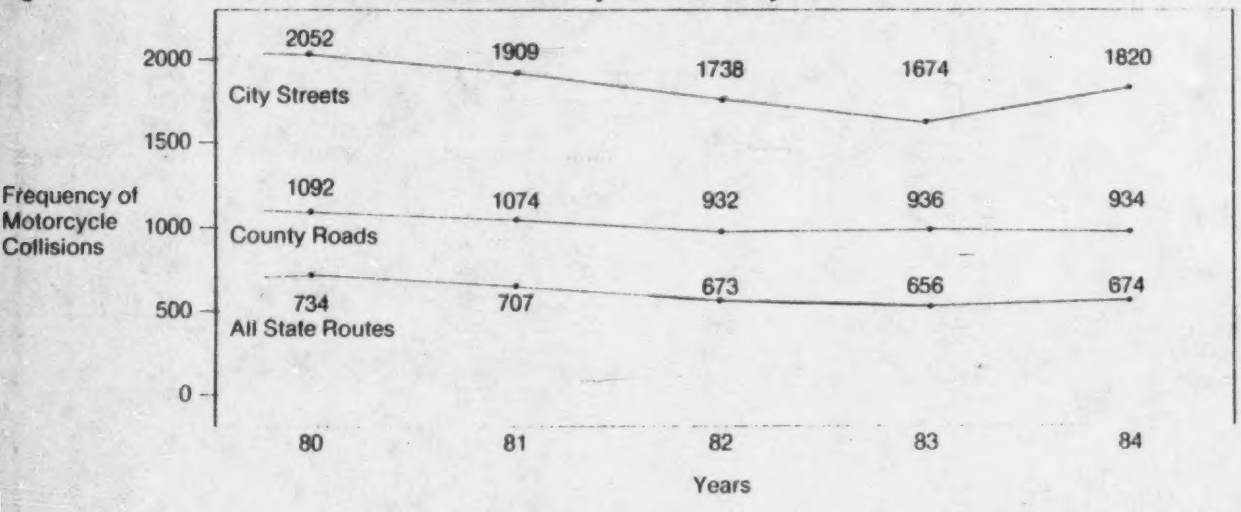
A further breakdown of 1984 motorcycle collisions by road type indicates that about 52.3% of the total collisions, 50.8% of the injury collisions and 33.3% of the fatal accidents occurred on city streets. About 27.8% of the injury collisions, 26.9% of the total collisions and 36.2% of the fatal collisions happened on county roads. State routes recorded 10.5% of the injury and 9.9% of the total collisions as well as 15.9% of the fatal motorcycle collisions (Table 5-3).

Table 5-3 **LOCATION OF MOTORCYCLE COLLISIONS — 1984**

Statewide Routes	Total Collisions	Fatal Collisions	Injury Collisions	P.D. Only Collisions	Motor-cyclists Killed	Motor-cyclists Injured
Interstate System	197	2	168	27	2	185
Other Full Control	54	0	47	7	0	53
U.S. Rt. No. (excluding city streets)	78	5	69	4	7	81
State Rt. No. (excluding city streets)	345	11	310	24	12	366
County Roads	934	25	823	86	27	995
City Streets (including U.S. and State Rt. in cities)	1,820	23	1,505	292	23	1,740
Other Traffic Ways	49	3	43	3	3	51
TOTAL	3,477	69	2,965	443	74	3,471

Total frequency of motorcycle collisions occuring on city streets and state highways increased during 1984 while county roads recorded a slight decrease. The increases on city streets and state routes follow a four-year decline (Figure 5-1).

Figure 5-1 **Location of Motorcycle Accidents By Year**



MOTORCYCLE COLLISIONS BY AGE GROUP

The 16-24 year old motorcycle rider continues to be over-represented in the accident population compared to the percentage of licensed motorcycle drivers comprising that age group. From age 25 on up, motorcycle riders continue to be under-represented (Table 5-4).

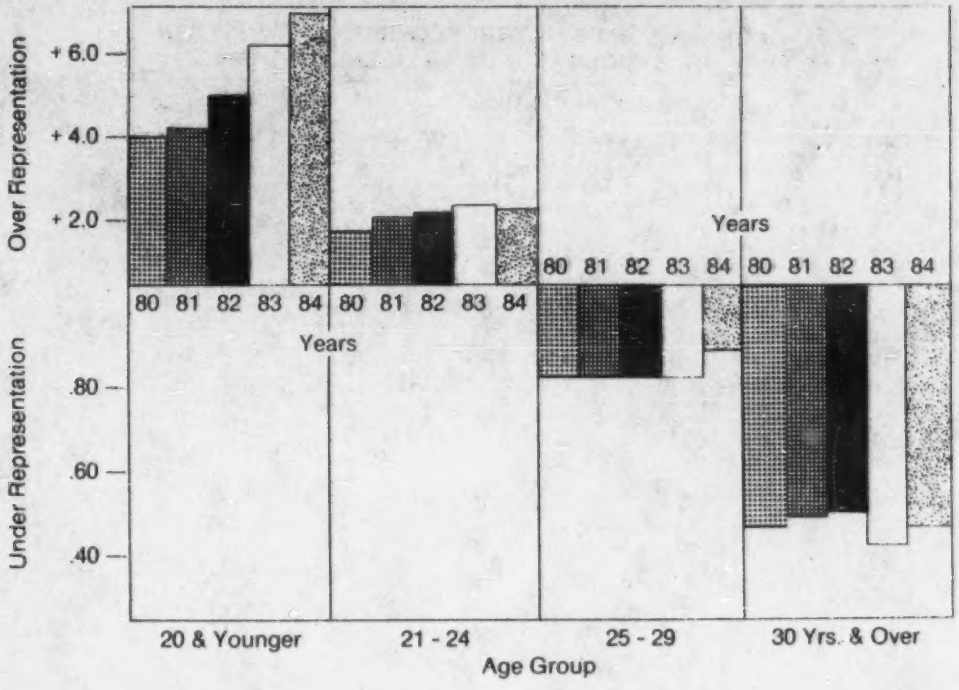
Table 5-4 **COMPARISON OF MOTORCYCLE RIDERS INVOLVED IN COLLISIONS TO NUMBER LICENSED IN 1984**

	Motorcyclist Involved In:						Percent of Licensed Drivers	Over/Under Representation
	Fatal Collisions		Injury Collisions		Total Collisions			
	No.	% of Total	No.	% of Total	No.	% of Total		
Under 16	3	4.11%	73	2.48%	84	2.52%	—	—
16	0	—	79	2.69	83	2.49	0.10%	24.90
17-18	7	9.59	277	9.43	321	9.63	1.04	9.26
19-20	9	12.33	411	14.00	458	13.73	2.66	5.16
21-22	9	12.33	403	13.71	450	13.49	4.44	3.04
23-24	11	15.07	295	10.04	347	10.41	5.91	1.76
25-29	12	16.44	572	19.47	637	19.11	20.77	.92
30-34	6	8.22	329	11.20	377	11.31	21.91	.52
35-39	10	13.70	212	7.22	248	7.44	15.32	.48
40-44	1	1.37	105	3.57	121	3.63	9.78	.37
45-54	4	5.48	116	3.95	135	4.05	10.66	.38
55-64	1	1.37	51	1.74	55	1.65	5.40	.31
65 and over	0	—	15	0.51	18	0.54	2.01	.27

Figure 5-2 shows that motorcycle riders under 25 years of age, and particularly those 20 years old and younger, continue to be over-represented in total motorcycle accident involvement when compared to the percentages of licensed motorcycle riders comprising these age groups. The 25-29 year old and the 30 year old and over age group continue to be under-represented.

Figure 5-2

Comparison of Motorcycle Driver Over/Under Representation Collisions to Motorcycle Endorsement by Age Group 1980-1984



PRINCIPAL VIOLATIONS IN ACCIDENTS BY AGE GROUPS

Speed too fast for conditions was the principal cause of motorcycle collisions for all age groups in 1984, contributing to 22.5% of the year's motorcycle violations. Motorcyclists' driving while intoxicated was the second leading violation, contributing 10.7% to the violation total. Speed over the legal limit was the third most predominate violation, contributing 10.6% to the total of motorcycle driver violations (Table 5-5).

Table 5-5 **MOTORCYCLIST VIOLATIONS BY AGE — 1984**
(Investigated Collisions Only)

			AGE OF VIOLATOR							
Violation	Total Viol.	% of Total	20 & Under	21 24	25 29	30 34	35 44	45 54	55 & Over	Not Stated
Speed — Conditions	594	22.5	164	145	123	68	51	19	10	14
Speed — Over Legal	281	10.6	94	83	39	33	22	4	1	5
Failed to Yield	152	5.7	68	26	19	15	11	4	3	6
D.W.I.	283	10.7	40	84	59	50	38	7	1	4
Following Too Closely	143	5.4	48	28	28	13	12	7	5	2
Improper Passing	169	6.4	52	46	25	16	17	1	2	10
Operating Defective Equipment	145	5.5	55	30	20	16	13	8	2	1
Disregard Signs/ Signals	111	4.2	45	25	12	14	9	1	3	2
Over Centerline	74	2.8	21	25	8	5	11	2	1	1
Other Violations	693	26.2	223	162	116	59	66	31	16	20
TOTAL	2,645	100%	810	654	449	289	250	84	44	65

MOTORCYCLE COLLISIONS BY FIRST HARMFUL EVENT

In 1984 the most common first harmful event causing a single motorcycle collision was overturning. This cause predominated for all age groups. In multiple vehicle collisions involving motorcycles, the rear-end collision was most prevalent (14.3%). Angular collisions constituted the next most common event (14.2%) in multiple vehicle motorcycle collisions (Table 5-6).

Table 5-6 **MOTORCYCLE COLLISIONS BY FIRST HARMFUL EVENT — 1984**

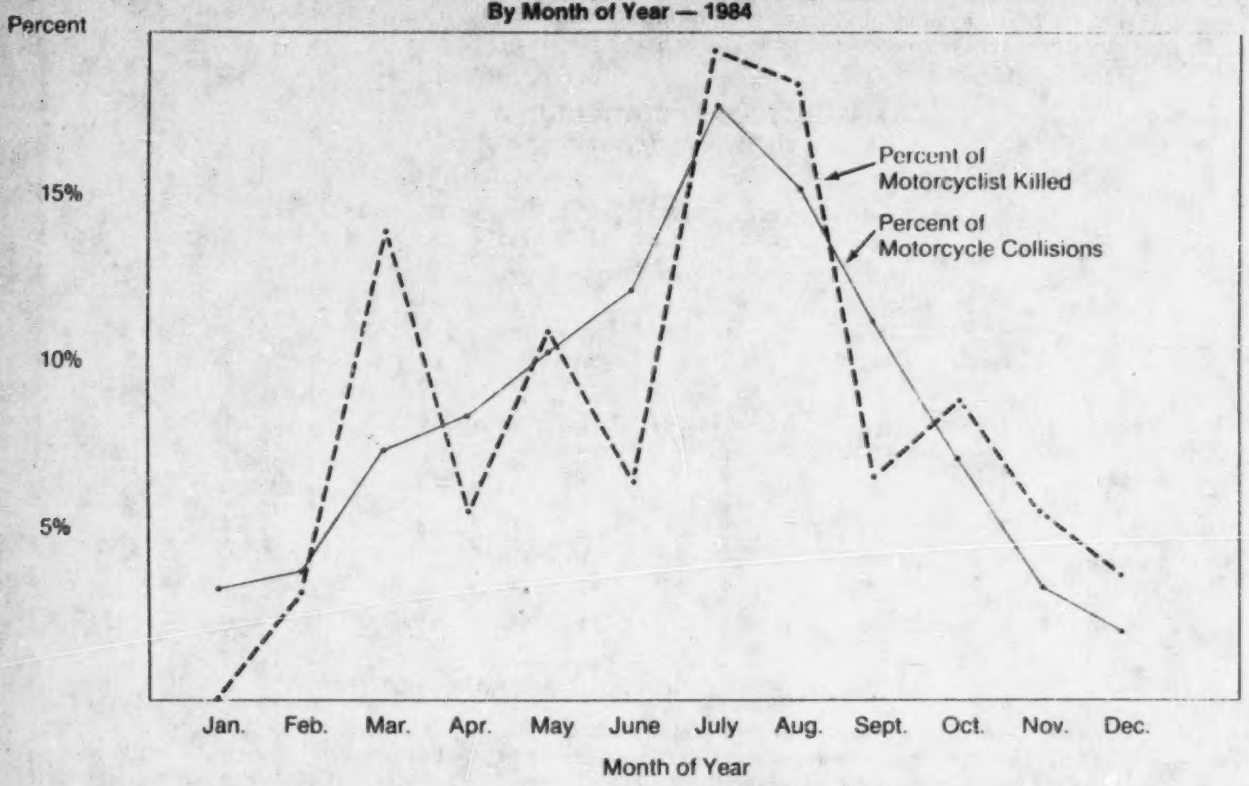
			Age of Motorcyclist						
Type of Collision (First Harmful Event)	Total All	% of Total	20 & Under	21 24	25 29	30 34	35 44	45 54	55 & Over
Single Motorcycle Coll:									
Struck Fixed Object	391	11.7%	111	105	76	37	40	14	8
Struck Other Object	12	0.4%	3	2	5	1	0	1	0
Overturned	798	23.9%	175	194	156	111	103	40	19
Motorcycle-Pedestrian	16	0.5%	7	2	2	2	3	0	0
Motorcycle-R.R. Train	0	—	0	0	0	0	0	0	0
Motorcycle-Pedalcyclist	16	0.5%	5	4	2	0	1	3	1
Motorcycle-Animal	65	1.9%	19	17	8	8	8	2	3
Non-Collision	41	1.2%	13	7	8	6	2	3	2
Total Single Motorcycle Coll's.	1,339	40.2%	333	331	257	165	157	63	33
Multiple Vehicle Coll:									
Head-on	36	1.1%	17	11	2	2	6	0	0
Rear-End	477	14.3%	133	123	89	49	48	23	12
Sideswipe	173	5.2%	43	47	31	21	20	8	3
Angular Direction	474	14.2%	142	100	97	60	47	16	12
Enter/Leave Driveway	454	13.6%	166	100	78	43	42	16	9
One Left/One Straight-Opp. Dir.	232	0.7%	57	59	50	26	34	5	1
Other Multiple Vehicle Coll.	147	4.4%	55	26	33	11	15	4	3
Total Multiple Vehicle Coll.	1,995	59.8%	613	466	380	212	212	72	40
TOTAL MOTORCYCLE COLL.	3,334	100.0%	946	797	637	377	369	135	73

TIME OF MOTORCYCLE ACCIDENT OCCURRENCE

The warmer weather months (June-Sept.) of 1984 recorded the greatest percentages of motorcycle collisions and fatalities (Figure 5-3).

Figure 5-3

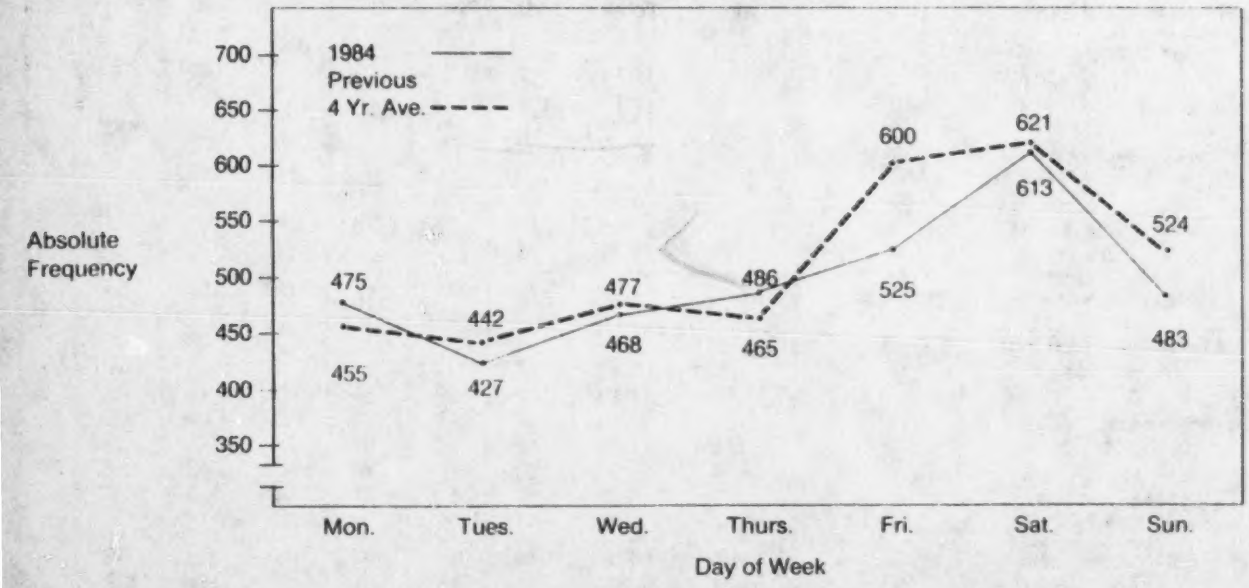
Comparison of Motorcycle Collisions and Fatalities By Month of Year — 1984



In comparing the frequencies of motorcycle collisions by day of week, Friday and Saturday are seen as the two days with the highest rate of occurrences. This trend has been consistent throughout the four-year baseline period and continued in 1984 as well. In 1984, total motorcycle collisions were down 3% from the average of the baseline period (Figure 5-4).

Figure 5-4

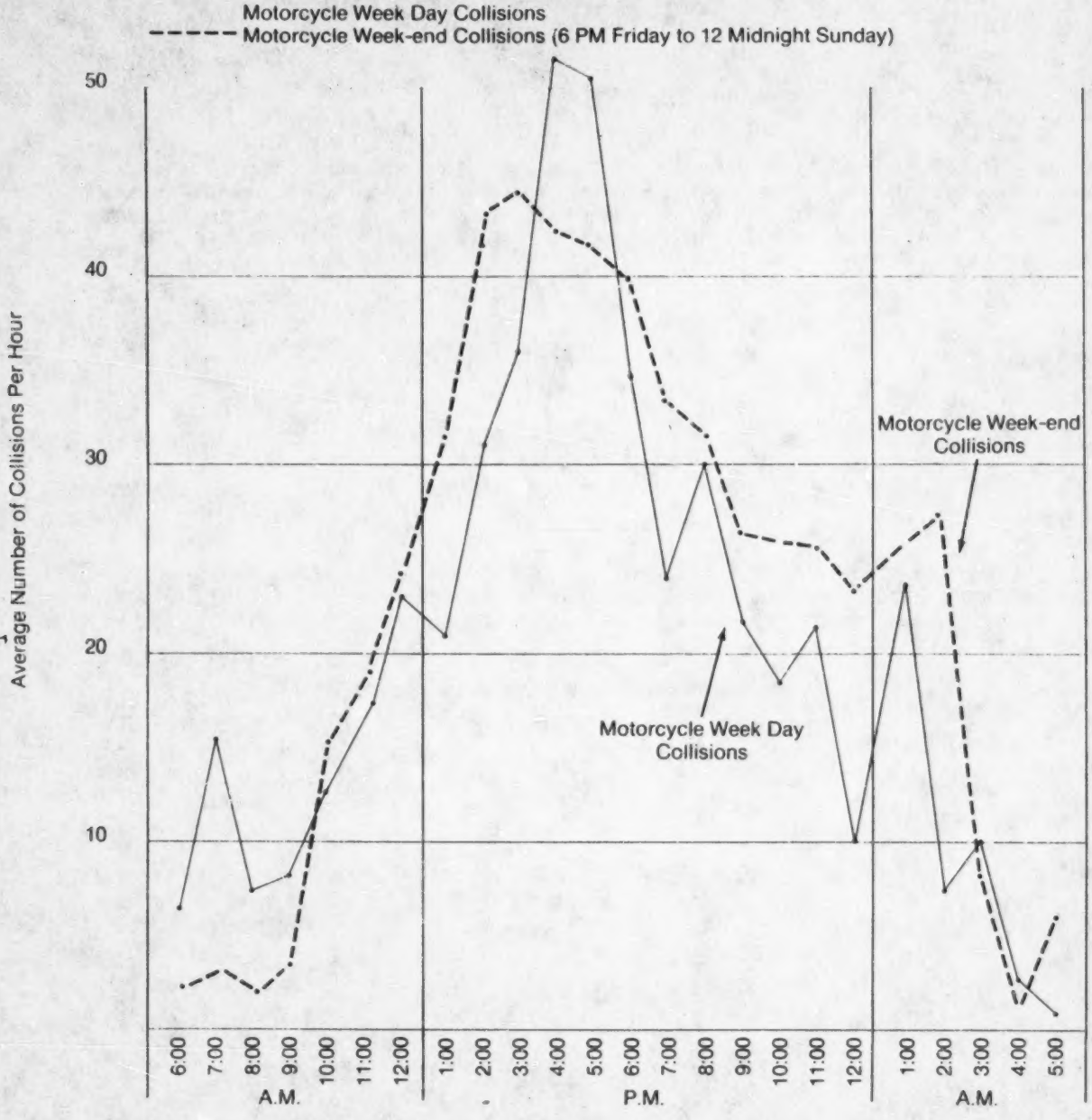
Frequency of Motorcycle Collisions by Day of Week Over the Period 1984 & Previous 4 Year Ave.



A further breakdown by hour of day when motorcycle collisions were occurring in 1984 reveals that the weekday hours from 1 p.m. to 7 p.m. constituted the most dangerous period of the day. The same 1 p.m. to 7 p.m. time frame also proved to be a dangerous time of day for weekend motorcycling. However, the average number of collisions per hour involving motorcycles on weekends continued to climb sharply from 9 a.m. to a 3 p.m. peak, unrelieved by the drop between noon and 1 p.m. evidenced on weekdays (Figure 5-5).

Figure 5-5

Average Number of Motorcycle Collisions by Hour of Day on Weekdays, Weekends and Weeklong in 1984



PEDALCYCLES

Overview

In 1984 total pedalcycle accidents increased 5.1% over the previous four-year average. The number of pedalcyclists killed dropped 15.4% from the baseline period. The number of persons injured was up 5.5% (Table 6-1).

Table 6-1 **PEDALCYCLE TRAFFIC COLLISIONS**
1980 — 1984

	1980	1981	1982	1983	Previous 4 Yr. Avg.	1984	% of Change 1984 to 4 Yr. Avg.
Total Collisions	1,097	1,083	1,056	1,230	1,117	1,174	+ 5.1%
Persons Killed	11	20	8	14	13	11	- 15.4%
Persons Injured	1,125	1,094	1,078	1,266	1,141	1,204	+ 5.5%

RURAL — URBAN PEDALCYCLE ACCIDENTS

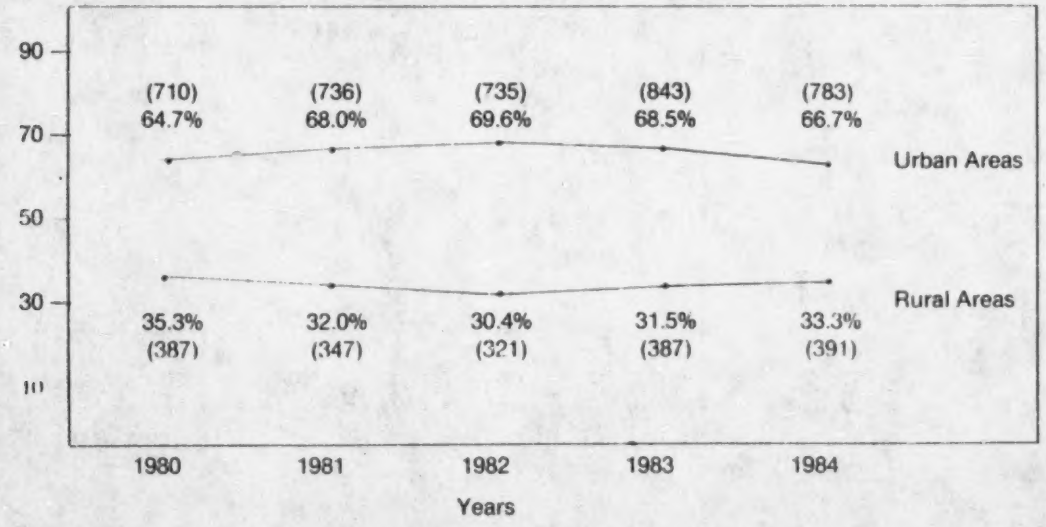
Total pedalcycle collisions in 1984 were up 8.3% in rural areas and up 3.6% in urban areas compared to a 4-year baseline period. The number of persons killed in rural areas in 1984 was 8, down one from the baseline, while 3 persons died in urban pedalcycle collisions, also down one from the average of the previous 4 years. Rural injuries from pedalcycle collisions were up 9.2% in 1984 over baseline while urban injuries in this regard were up 3.8% (Table 6-2).

Table 6-2 **RURAL — URBAN PEDALCYCLE ACCIDENTS**

Rural Areas	1980	1981	1982	1983	Previous 4 Yr. Avg.	1984	% of Change 1984 to 4 Yr. Avg.
Total Collisions	387	347	321	387	361	391	+ 8.3%
Persons Killed	9	14	4	10	9	8	- 11.1%
Persons Injured	395	353	335	401	371	405	+ 9.2%
Urban Areas							
Total Collisions	710	736	735	843	756	783	+ 3.6%
Persons Killed	2	6	4	4	4	3	- 25.0%
Persons Injured	730	741	743	865	770	799	+ 3.8%

In 1984, 66.7% of the pedalcycle collisions occurred in urban areas, continuing a downward trend from 1982's high of 69.6%. Rural areas experienced a slight increase to 33.3% in 1984, up from the 30.4% low point in 1982 and the 31.5% occurring in 1983 (Figure 6-1).

Figure 6-1 **Pedalcycle Collisions by Urban/Rural Locations**



PEDALCYCLISTS KILLED AND INJURED — BY AGE

In 1984, 27.2% of the pedalcyclists killed were in the 35-44 age bracket. The 10-14 age group experienced the largest number of injuries, 30.6% of the total. The number of pedalcyclists killed in 1984 fell by 15% from the 4-year average while injuries rose 4.5% (Table 6-3).

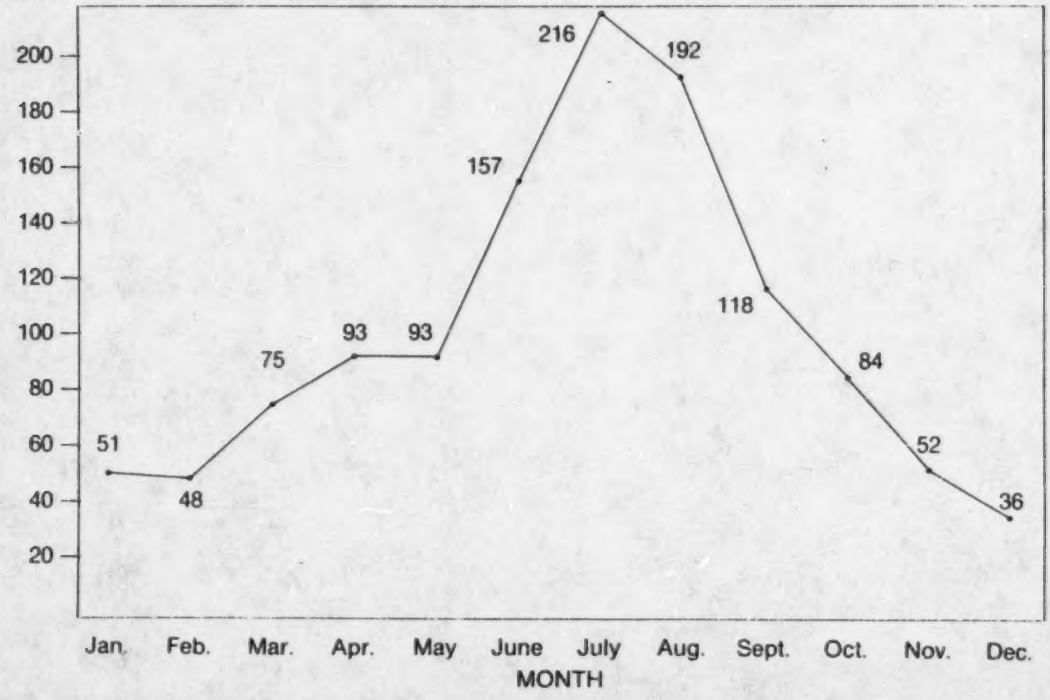
Table 6-3 **AGE OF PEDALCYCLIST KILLED AND INJURED — 1980 - 1984**

	Killed							Injured						
Age	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change
0 to 4	0	2	1	1	1	0	- 100%	21	14	16	21	18	19	+ 5.6%
5 to 9	2	4	1	1	2	1	- 50%	217	180	160	180	184	171	- 7.1%
10 to 14	5	2	1	5	3	2	- 33%	365	306	331	404	352	359	+ 2.0%
15 to 19	2	5	1	4	3	1	- 67%	203	201	197	240	210	240	+ 14.3%
20 to 24	1	4	0	2	2	0	- 100%	119	124	103	113	115	122	+ 6.1%
25 to 34	1	0	1	0	1	0	- 100%	97	118	126	139	120	147	+ 22.5%
35 to 44	0	1	0	0	0	3	+ 100%	26	43	31	47	37	35	- 5.4%
45 to 54	0	0	1	0	0	0	0	10	13	15	11	12	17	+ 41.7%
55 to 64	0	1	1	0	1	1	N/C	4	12	7	11	9	8	- 11.1%
65 to 74	0	1	1	1	1	2	+ 100%	7	5	4	4	5	11	+ 120.0%
75 and Older	0	0	0	0	0	1	+ 100%	3	3	2	4	3	2	- 33.3%
Not Stated	0	0	0	0	0	0	0	53	60	56	63	58	41	- 29.3%
Total	11	20	8	14	13	11	- 15%	1,125	1,079	1,048	1,237	1,122	1,172	+ 4.5%

PEDALCYCLE FATAL AND INJURY ACCIDENTS — BY MONTH

The warm weather months of June through September accounted for more than half of all injury and fatal pedalcycle accidents in 1984. This four-month period contained slightly more than 56% of the year's total injuries and deaths (Figure 6-2).

Figure 6-2 **Persons Killed and Injured In Pedalcycle Collisions — By Month**



The city of Olympia experienced the highest pedalcycle collision rate in the state during 1984 with 97.3 collisions per 100,000 population. Olympia also had the highest pedalcyclist injury rate at 97.3 per 100,000. Wenatchee recorded the second highest collision rate in the state at 75 collisions per 100,000 population. Wenatchee's injury rate also was second highest at 69.2 injuries per 100,000 (Figure 6-3).

Figure 6-3

Pedalcycle Collision Rate By Population
Cities 15,000 Population and Greater
1984

Population		Pedalcycle Deaths	Death *Rate	Pedalcycle Injuries	Injury *Rate	Total Pedalcycle Collisions	Collision *Rate
250,000 and Over							
Seattle	490,300	2	.41	199	40.6	194	39.6
100,000 to 250,000							
Spokane	171,500	0	0	88	51.3	87	50.7
Tacoma	159,400	0	0	66	41.4	69	43.3
50,000 to 100,000							
Bellevue	78,620	0	0	43	54.7	42	53.4
Everett	56,680	0	0	26	45.9	24	42.3
25,000 to 50,000							
Yakima	49,340	0	0	20	40.6	21	42.6
Bellingham	46,010	0	0	28	60.9	28	60.9
Vancouver	42,850	0	0	19	44.3	19	44.3
Kennewick	37,240	0	0	6	16.1	6	16.1
Bremerton	33,970	0	0	20	58.9	20	58.9
Renton	33,340	0	0	9	27.0	8	24.0
Richland	31,660	0	0	8	25.3	9	28.4
Longview	29,820	0	0	17	57.0	17	57.0
Auburn	29,170	0	0	11	37.7	9	30.9
Olympia	28,790	0	0	28	97.3	28	97.3
Edmonds	27,880	0	0	9	32.3	9	32.3
Redmond	27,340	0	0	8	29.3	8	29.3
Walla Walla	26,250	0	0	14	53.3	14	53.3
Kent	25,640	0	0	9	35.1	9	35.1
15,000 to 25,000							
Lynnwood	23,139	0	0	8	34.6	8	34.6
Pullman	22,770	0	0	6	26.4	6	26.4
Mercer Is.	20,910	0	0	3	14.3	3	14.3
Pasco	18,930	0	0	3	15.8	3	15.8
Kirkland	18,670	1	5.36	6	32.2	7	37.6
Puyallup	18,600	0	0	3	16.1	3	16.1
Aberdeen	17,400	0	0	6	34.5	6	34.5
Wenatchee	17,330	0	0	12	69.2	13	75.0
Pt. Angeles	17,220	0	0	3	17.4	3	17.4
Mt. Lk. Terr.	16,020	0	0	6	37.5	6	37.5

*Frequency per 100,000

PEDESTRIANS

Overview

The 97 pedestrians killed in 1984 were 7.6% fewer than the 4-year average. The 1,710 pedestrians injured were 2.4% below the 4-year baseline (Table 7-1).

Table 7-1

PEDESTRIANS KILLED AND INJURED 1980 — 1984
STATEWIDE — URBAN AND RURAL

	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change 1984 to 4 Yr. Avg.
Pedestrians Killed	108	121	101	89	105	97	- 7.6%
Pedestrians Injured	1906	1696	1705	1701	1752	1710	- 2.4%

LOCATIONS AND AGE GROUPS OF PEDESTRIAN ACCIDENTS

In 1984 pedestrian fatalities in rural areas decreased 10.5% from the previous 4-year average while injuries declined 9.1%. Urban area pedestrian fatalities in 1984 declined 4.2% from baseline with injuries showing a slight 0.2% increase (Table 7-2).

Table 7-2

	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change 1984 to 4 Yr. Avg.
RURAL AREAS							
Pedestrian Killed	58	69	55	44	57	51	-10.5%
Pedestrian Injured	551	457	496	471	494	449	- 9.1%
URBAN AREAS (2,500 population and greater)							
Pedestrians Killed	50	52	46	45	48	46	- 4.2%
Pedestrians Injured	1355	1239	1209	1230	1258	1261	+ 0.2%

PEDESTRIANS KILLED AND INJURED — BY AGE

In 1984 pedestrians 75 years old and above experienced a 23.5% decline in number of fatalities from the previous 4-year average. This age group likewise saw a 13.0% decline from baseline in the number of pedestrian injuries. The largest number of pedestrians killed in 1984 was 18 in the 25-34 year age bracket. This age group also experienced the highest number of pedestrian injuries (255) for the year (Table 7-3).

Table 7-3

AGE OF PEDESTRIANS KILLED AND INJURED — 1980 - 1984

	Killed							Injured						
Age	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change
0 to 4	5	6	5	4	5	8	+ 60.0%	86	75	79	84	81	75	- 7.4%
5 to 9	5	9	6	6	7	6	- 14.3%	256	246	225	216	236	215	- 8.9%
10 to 14	4	6	6	4	5	8	+ 60.0%	217	209	209	216	213	194	- 8.9%
15 to 19	7	14	8	13	11	6	- 45.5%	238	180	219	209	212	215	+ 1.4%
20 to 24	11	12	9	6	10	9	- 10.0%	168	155	174	163	165	167	+ 1.2%
25 to 34	16	18	15	12	15	18	+ 20.0%	270	253	235	222	245	255	+ 4.1%
35 to 44	11	8	9	10	10	8	- 20.0%	132	130	129	124	129	126	- 2.3%
45 to 54	9	13	2	5	7	4	- 42.9%	121	84	69	97	93	121	+ 30.1%
55 to 64	7	9	11	8	9	11	+ 22.2%	97	75	89	89	88	89	+ 1.1%
65 to 74	10	10	13	8	10	6	- 40.0%	99	92	61	90	86	89	+ 3.5%
75 and Older	22	16	17	13	17	13	- 23.5%	85	91	103	89	92	80	- 13.0%
Not Stated	1	0	0	0	0	0	0	137	106	113	102	115	84	- 27.0%
Total	108	121	101	89	102	97	- 4.9%	1,906	1,696	1,705	1,701	1,752	1,710	+ 2.5%

ACTIONS OF PEDESTRIANS KILLED AND INJURED 1984 — RURAL AND URBAN AREAS

The most frequently injured or killed pedestrian in rural areas in 1984 fell into the 15-24 year old age bracket. The most common action of this group leading to the accidents was "not in roadway." The next most common accident-contributing action by the group was crossing "not at intersection" (Table 7-4).

Table 7-4

RURAL AREAS	No. Killed	% of Total	Total Killed or Inj.	% of Total	Age 0-4	Age 5-14	Age 15-24	Age 25-64	Age 65 & Up	Not Stated
Crossing, entering roadway at intersection	5	9.8%	92	18.4%	1	24	25	26	12	4
Not at intersection	22	43.1%	170	33.9%	15	71	35	35	12	2
Walking with traffic	5	9.8%	32	6.4%	0	4	15	7	5	1
Walking against traffic	1	2.0%	8	1.6%	0	2	4	2	0	0
Standing or working in roadway	4	7.8%	36	7.2%	1	1	9	21	2	2
Playing in roadway	1	2.0%	8	1.6%	1	4	0	1	0	2
Lying in roadway	2	3.9%	3	0.6%	0	0	1	2	0	0
Not in roadway	8	15.7%	107	21.4%	2	18	46	32	3	6
Other & Not Stated	3	5.9%	45	9.0%	0	7	15	17	0	6
TOTAL	51	100.0%	501	100.0%	20	131	150	143	34	23
Percent of Total Killed or Injured					4.0%	26.1%	29.9%	28.5%	6.8%	4.6%

ACTIONS OF PEDESTRIANS KILLED & INJURED — 1984

In urban areas in 1984, the most frequently involved pedestrian in fatal and injury accidents fell into the 25-64 year old age group, which accounted for 37.3% of all pedestrians killed or injured in traffic accidents. The most common contributing action of this age group was "crossing, entering roadway at intersection" (Table 7-5).

Table 7-5

URBAN AREAS	No. Killed	% of Total	Total Killed or Inj.	% of Total	Age 0-4	Age 5-14	Age 15-24	Age 25-64	Age 65 & Up	Not Stated
Crossing, entering roadway at intersection	15	32.6%	636	48.5%	11	107	110	267	108	33
Not at intersection	19	41.3%	396	30.2%	35	150	65	103	29	14
Walking with traffic	2	4.3%	19	1.5%	0	3	5	8	2	1
Walking against traffic	1	2.2%	9	0.6%	0	1	2	3	1	2
Standing or working in roadway	1	2.2%	67	5.1%	4	1	20	36	2	4
Playing in roadway	1	2.2%	14	1.0%	6	4	0	0	0	0
Lying in roadway	2	4.3%	4	0.3%	1	0	1	2	0	0
Not in roadway	3	6.5%	92	7.0%	2	11	23	44	8	4
Other & Not Stated	2	4.3%	73	5.6%	4	15	18	26	5	5
TOTAL	46	100.0%	1,310	100.0%	63	292	248	489	155	63
Percent of Total Killed or Injured					4.8%	22.3%	18.9%	37.3%	11.8%	4.8%

PEDESTRIAN ACCIDENTS
BY DAY OF WEEK AND HOUR OF DAY

In 1984 the highest one-day percentages of weekly total and fatal accidents involving pedestrians (18.8% and 22.6% respectively) were recorded for Friday (Figure 7-1). The 3 p.m. to 6 p.m. time period evidenced the greatest percentages of both fatal and total pedestrian collisions at 24.7% and 30.2%, respectively (Figure 7-2).

Figure 7-1 **Total and Fatal Pedestrian Collisions by Day of Week — 1984**

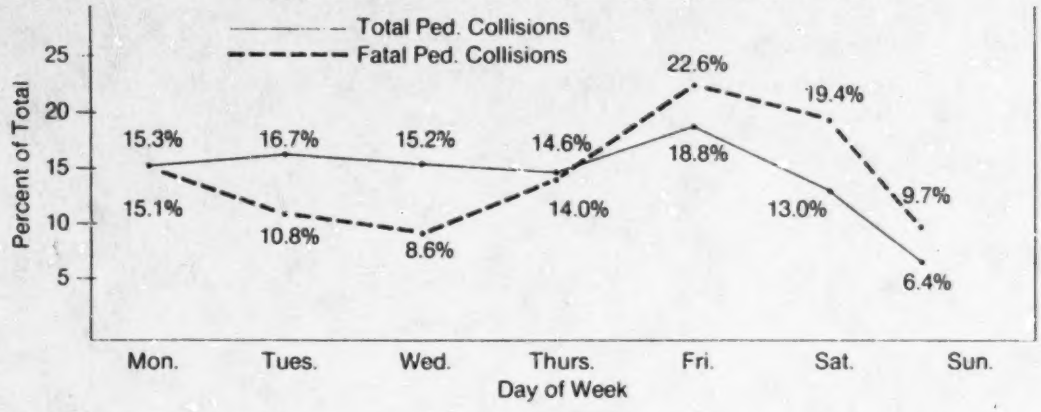


Figure 7-2 **Total and Fatal Pedestrian Collisions by Hour of Day — 1984**

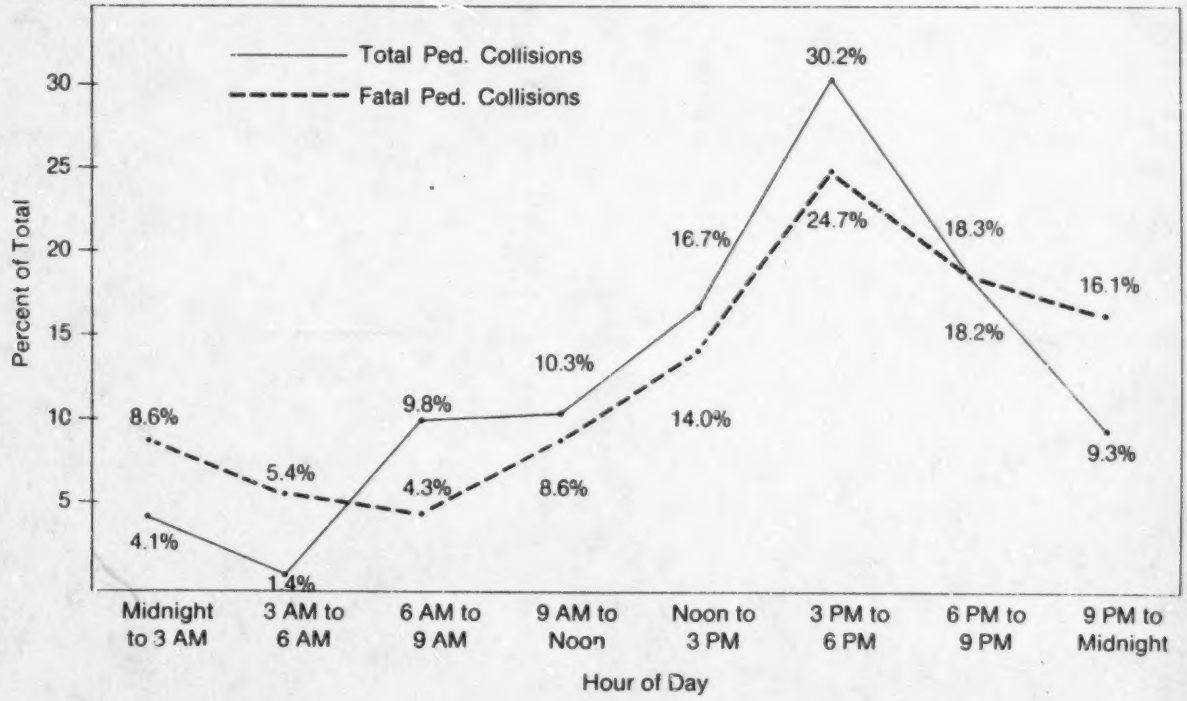


Figure 7-5 below presents the 1984 number and rates for pedestrian traffic deaths, injuries, and total collisions for cities of 15,000 or more in Washington. Seattle had the greatest number of fatalities, but Vancouver had the greatest rate of pedestrian fatalities at 7 per 100,000 population. Seattle had the greatest number of pedestrian collisions and pedestrian injuries as well as the highest rate for total pedestrian collisions (95.7 per 100,000) and pedestrian injuries (103.4 per 100,000).

Figure 7-5

Pedestrian Collision Rate By Population
Cities 15,000 Population and Greater
1984

Population		Pedestrian Deaths	Death *Rate	Pedestrian Injuries	Injury *Rate	Total Pedestrian Collisions	Collision *Rate
250,000 and Over Population							
Seattle	490,300	17	3.47	507	103.4	469	95.7
100,000 to 250,000 Population							
Spokane	171,500	5	2.92	123	71.72	108	63.0
Tacoma	159,400	5	3.14	99	62.11	99	62.11
50,000 to 100,000 Population							
Bellevue	78,670	1	1.27	32	40.68	32	40.68
Everett	56,680	2	3.53	42	74.10	38	67.04
25,000 to 50,000 Population							
Yakima	49,340	1	2.03	38	77.02	35	70.94
Bellingham	46,010	2	4.35	19	41.30	18	39.12
Vancouver	42,850	3	7.00	35	81.68	31	72.35
Kennewick	37,240	0	-0-	3	8.06	3	8.06
Bremerton	33,970	0	-0-	32	94.20	31	91.26
Renton	33,340	0	-0-	18	53.99	15	44.99
Richland	31,660	0	-0-	7	22.11	6	18.95
Longview	29,820	1	3.35	15	50.30	16	53.66
Auburn	29,170	0	-0-	14	47.99	14	47.99
Olympia	28,790	0	-0-	18	62.52	18	62.52
Edmonds	27,880	0	-0-	9	32.28	8	28.69
Redmond	27,340	1	3.66	9	32.92	10	36.58
Walla Walla	26,250	0	-0-	9	34.29	7	26.67
Kent	25,640	0	-0-	9	35.10	8	31.20
15,000 to 25,000 Population							
Lynnwood	23,139	0	-0-	13	56.18	11	47.54
Pullman	22,770	0	-0-	7	30.74	7	30.74
Mercer Is.	20,910	0	-0-	3	14.35	2	9.56
Pasco	18,930	1	5.28	8	42.26	9	47.54
Kirkland	18,610	0	-0-	6	32.24	5	26.87
Puyallup	18,600	1	5.38	12	64.52	9	48.39
Aberdeen	17,400	0	-0-	8	45.98	8	45.98
Wenatchee	17,330	0	-0-	5	28.85	5	28.85
Pt. Angeles	17,220	0	-0-	11	63.88	8	46.46
Mt. Lk. Ter.	16,020	0	0	9	56.18	8	49.94

*Frequency per 100,000 population

HEAVY TRUCKS

Overview

In 1984, 7,472 heavy trucks were involved in collisions, for a 16.6% increase over the four-year baseline. Registrations in 1984 totaled 150,661, a 6.8% increase over the four-year average. Based on this registration figure, the 1984 collision rate was 495.9 collisions per 10,000 registered trucks, an increase of 9.2% over the previous four-year average.

There were 87 heavy trucks involved in fatal collisions during 1984. This was a 4.8% increase over the baseline average. The fatal collision rate of 5.8 collisions per 10,000 registered trucks was a slight decrease from the baseline period (Table 8-1).

Table 8-1 **SUMMARY OF HEAVY TRUCKS**
10,000 GROSS VEHICLE WEIGHT (GVW) AND GREATER INVOLVED IN TRAFFIC COLLISIONS

	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change 1984 to 4 Yr. Avg.
Total Trucks Involved in Collisions*	7,164	6,122	5,822	6,525	6,408	7,472	+16.6%
Trucks Involved in Fatal Collisions	108	97	63	65	83	87	+ 4.8%
Registration of Heavy Trucks**	136,669	141,042	141,225	145,595	141,133	150,661	+ 6.8%

COLLISIONS PER 10,000 REGISTERED TRUCKS

RATES:	1980	1981	1982	1983	4 Yr. Avg.	1984	% of Change 1984 to 4 Yr. Avg.
Total Collision Rate	524.2	434.1	412.2	448.2	454.0	495.9	+ 9.2%
Fatal Collision Rate	7.9	6.9	4.5	4.5	5.9	5.8	- 0.3%

*Minimum damage for a reportable collision $300 to the property of any one person
**Estimated

LOCATION OF HEAVY TRUCK COLLISIONS BY SEVERITY

In 1984, 54% of the heavy trucks involved in total collisions were in urban areas (Figure 8-1). In 1984 there were 18 heavy trucks involved in fatal accidents in urban areas, compared to 69 in the rural areas. These figures comprise a 20.7 - 79.3% urban/rural proportion of involvement in fatal accidents, (Figure 8-2). The 1984 heavy truck involvement in injury accidents was split, 1,068 urban to 1,173 rural. These figures are a 47 - 53% urban/rural split (Figure 8-3).

Figure 8-1 **Heavy Truck Collision Involvement by Urban/Rural Location**

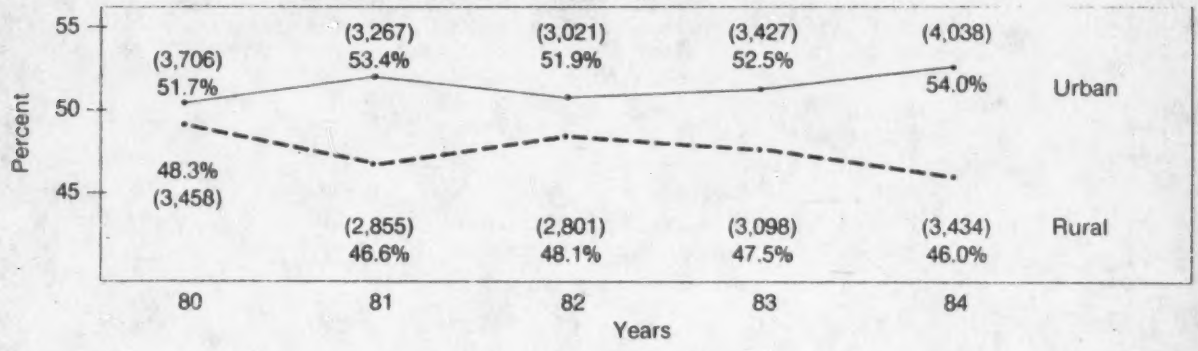


Figure 8-2 **Heavy Trucks Involved in Fatal Collisions by Urban/Rural Location**

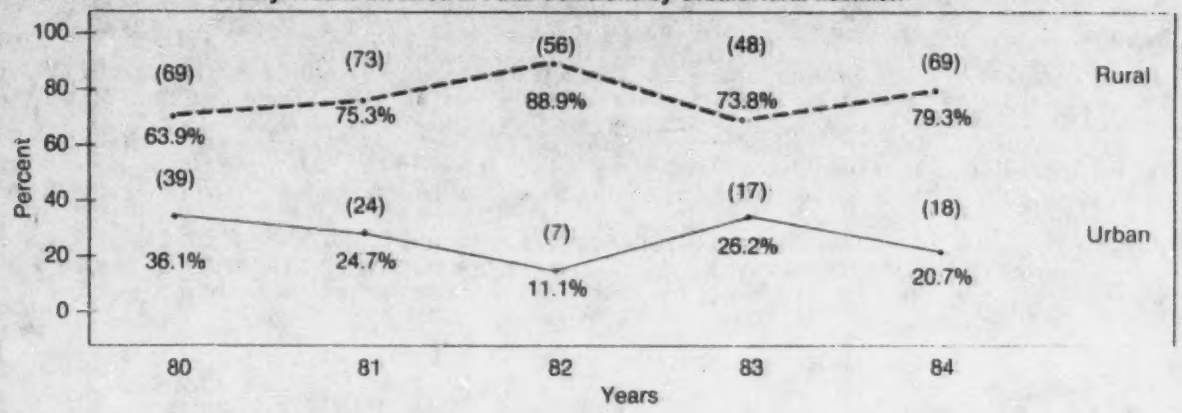
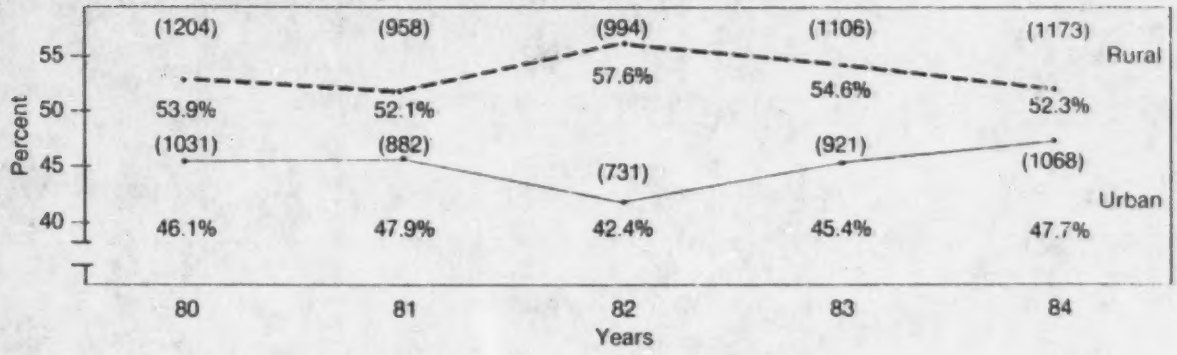


Figure 8-3 **Heavy Truck Injury Involvement by Urban/Rural Location**



AGE OF DRIVERS INVOLVED IN HEAVY TRUCK COLLISIONS IN 1984

The 19-year old and under and 20-29 year old age groups were the only two age groups to be over-represented in heavy truck collisions in 1984 compared to the percentage of licensed drivers each group comprised. The 19 and under group comprised 1.1% of all licensed heavy truck operators. Yet, this group was involved in 3.2% of all heavy truck accidents, 1.3% of the fatal accidents and 3.4% of the heavy truck injury accidents. The ratio for percent of accident involvement compared to percent of licensed drivers comprised by the 19 and under age group resulted in an over-representation ratio of 2.90 for this group. The 20-29 year old age group was involved in 31.4% of the total collisions, 31.6% of the fatal collisions and 31.9% of the injury collisions. This group comprised 17.9% of all drivers having a classified endorsement on their licenses. Based on the percent of licensed drivers and accident involvement, this group was over-represented in accidents by a ratio of 1.75. The rest of the driver age groups are under-represented in total accidents (Table 8-2).

Table 8-2

Age	All Accidents Frequency	%	Fatal Accidents Frequency	%	Injury Accidents Frequency	%	*Percent of Classified End. Drivers	**Over/Under represen-tation
19 & Under	205	3.2	1	1.3	67	3.4	1.1%	2.90
20-29	2,008	31.4	25	31.6	631	31.9	17.9%	1.75
30-39	1,941	30.4	19	24.1	592	29.9	33.2%	.92
40-49	1,230	19.2	24	30.4	379	19.2	22.7%	.85
50-59	773	12.1	9	11.4	234	11.8	14.4%	.84
60 & Over	238	3.7	1	1.3	75	3.8	10.7%	.35

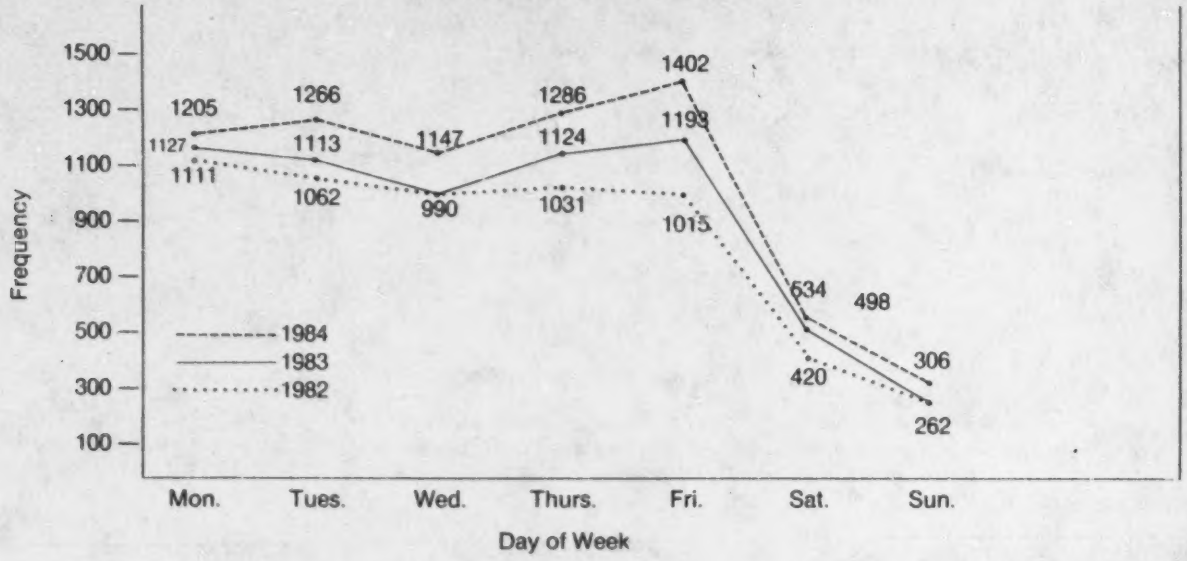
*Classified Endorsement is only required for operators of the larger trucks and truck combinations
**Percent of collision involvement to percent of licensed drivers

HEAVY TRUCK ACCIDENT OCCURRENCES BY TIME

The daily frequency of heavy truck accidents in 1984 exceeded those occurrences of the two previous years while following about the same frequency pattern. The weekdays had the highest frequencies of heavy truck collision involvement. During the weekends, there was a substantial decline in the frequency of heavy truck involvement in collisions (Figure 8-4).

Figure 8-4

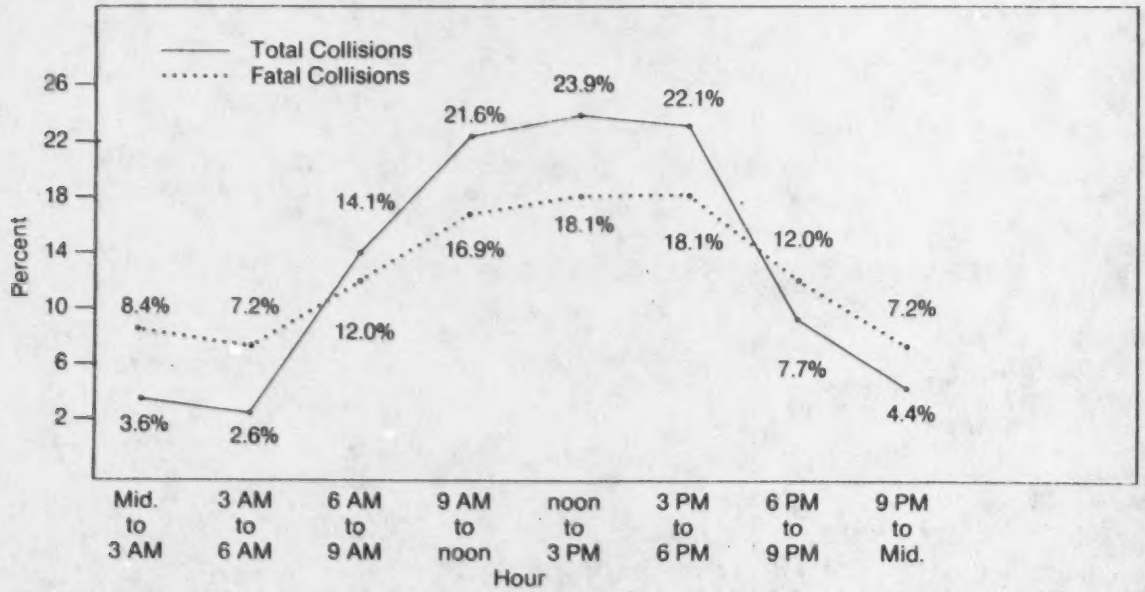
Heavy Truck Involvement in Total Collisions by Day of Week for 1982 - 1984



In 1984 the time period from noon to 3 PM recorded the highest incidence of heavy truck involvement in collisions. A substantial increase in collisions commenced during the 3 AM to 6 AM time period, peaking at the noon to 3 PM period and then commencing to decline (Figure 8-5).

Figure 8-5

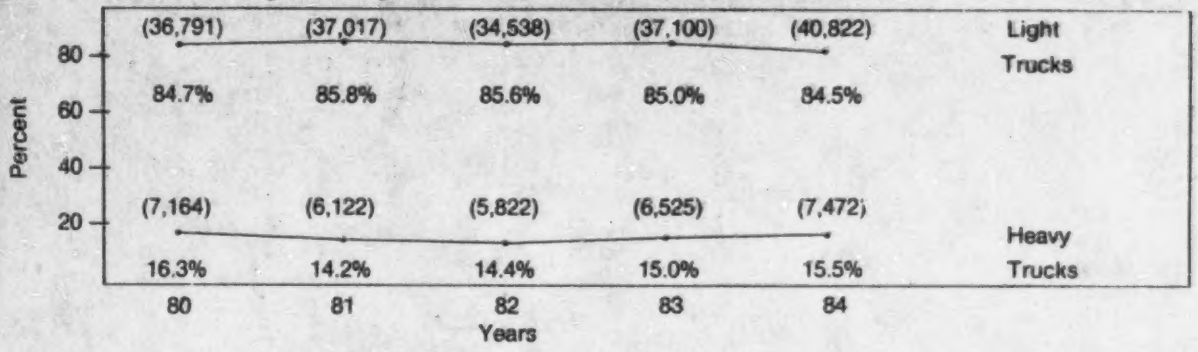
Heavy Truck Involvement in Total and Fatal Collisions by Hour of Day — 1984



TOTAL COLLISIONS — LIGHT TRUCKS vs. HEAVY TRUCKS

In 1984 there were 40,822 light trucks and 7,472 heavy trucks involved in collisions. This 84.5% - 15.5% ratio between light and heavy trucks represents only a slight change from the ratios of the previous three years (Figure 8-6).

Figure 8-6 **Light & Heavy Truck Involvement in Total Collisions 1980 - 1984**



COLLISIONS BY FIRST HARMFUL EVENT

During 1984 heavy trucks were involved in 5,170 collisions involving other moving motor vehicles. This figure represents 72.5% of all heavy truck collisions. Heavy trucks also were involved in 507 collisions in which the other vehicle was parked and in 801 collisions with fixed or other objects. Overturning, other non-collisions and all other collisions accounted for the remaining heavy truck-involved collisions (Table 8-3).

Table 8-3 **HEAVY TRUCK COLLISIONS BY FIRST HARMFUL EVENT — 1981, 1982, 1983 & 1984**

	1981		1982		1983		1984	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Collision with other moving motor vehicle	4,224	71.7	3,984	71.2	4,577	72.6	5,170	72.5
Collision with parked motor vehicle	468	7.9	422	7.5	409	6.5	507	7.1
Collision with fixed or other object	648	11.0	646	11.5	689	10.9	801	11.2
Overturning	317	5.4	331	5.9	394	6.2	409	5.7
Other non-collision	134	2.3	135	2.4	145	2.3	139	1.9
All other collisions/Pedestrian, Pedalcyclist, etc.	100	1.7	81	1.5	93	1.5	117	1.6

HEAVY TRUCK DEFECTS

In 1984 defective brakes accounted for 44.1% of the defects detected in heavy trucks involved in collsions. Other defects and the percentages were worn or smooth tires, 11.4%; defective rear lights, 7.5%; defective steering, 3.4%, and all other defects, 28.4% (Table 8-4).

Table 8-4 **DEFECTS OF HEAVY TRUCKS INVOLVED IN COLLISIONS — 1981, 1982, 1983 & 1984**

Condition of Vehicle	1981		1982		1983		1984	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Defective Brakes	202	40.3	185	36.4	228	40.0	359	44.1
Defective Headlights	4	0.8	2	0.4	5	0.9	6	0.7
Defective Rear Lights	37	7.4	46	9.1	44	7.7	61	7.5
Defective Steering Mechanism	22	4.4	20	3.9	23	4.0	28	3.4
Puncture or Blowout	28	5.6	31	6.1	38	6.7	37	4.5
Worn or Smooth Tires	84	16.8	70	13.8	94	16.5	93	11.4
Other Defects	124	24.8	154	30.3	195	34.2	231	28.4

*Based on 5,866 trucks involved in total investigated collisions.

PUPIL TRANSPORTATION

Overview

In the 1983-1984 school year there were 248 reported school bus collisions in which 142 persons were injured. This represented a 13.6% decrease over the previcus 3-year average in total school bus collisions and an 18.4% decrease in the number of persons injured. There were 6,005 registered school buses in the 1983-1984 school year. This marked a 2.4% decrease in registrations from the 3-year baseline period. (Table 9-1).

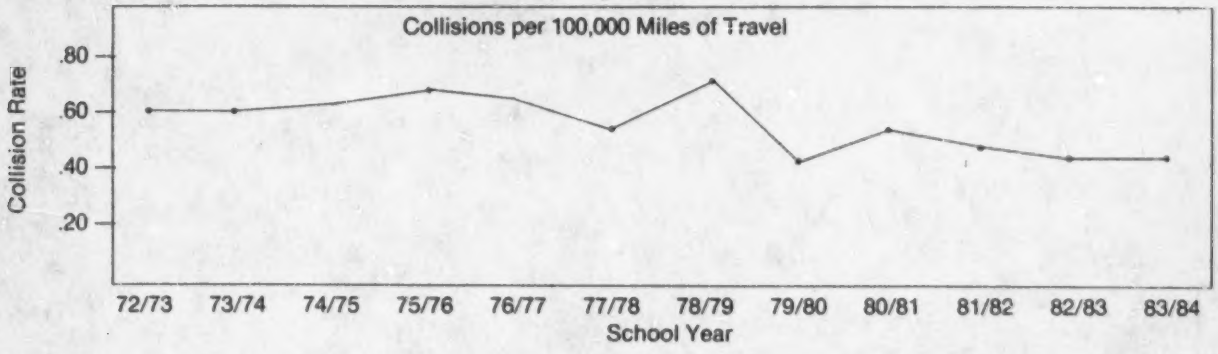
Table 9-1 **FOUR YEAR COMPARISON OF COLLISIONS INVOLVING SCHOOL BUSES**
1980/1981 — 1983/1984

	School Year					Percent of Change '83-84 to 3 Yr. Avg.
	1980 1981	1981 1982	1982 1983	Prev. 3 Yr. Average	1983 1984	
Total Collisions	324	281	256	287	248	- 13.6%
Fatal Collisions	1	2	2	2	0	-100.0%
Number Killed	1	2	2	2	0	-100.0%
Injury Collisions	112	90	85	96	75	- 21.9%
Persons Injured						
Pupils	80	44	57	60	50	- 16.7%
School Bus Drivers	14	16	12	14	11	- 21.4%
Other Occupants of School Bus	0	0	1	1	4	+300.0%
Pedestrian/Bicyclist	9	2	2	4	6	+ 50.0%
Occupants of Other Vehicles Involved	98	93	94	95	71	- 25.3%
Total Injured	201	155	166	174	142	- 18.4%
Property Damage Only Collisions	211	189	169	190	173	- 8.9%
School Bus Registration	6,052	6,127	6,286	6,155	6,005	- 2.4%
*Registration Collision Rate	53.5	45.9	40.7	46.6	41.3	- 11.4%
Miles Traveled (In Thousands)	57,471.8	58,619.5	64,713.1	60,268.1	61,042.7	+ 1.3%
**Mileage Collision Rate	.56	.48	.40	.48	.41	- 14.6%

*Collisions per 1,000 registered vehicles
**Collisions per 100,000 miles of travel

In 1983-1984 school year, the school bus mileage collision rate was .41 collisions per 100,000 miles of travel (Figure 9-1). This rate was up from the 1982-83 rate of .40 and the .48 rate of the previous 3-year baseline (Figure 9-1).

Figure 9-1 **COMPARISON OF SCHOOL BUS MILEAGE COLLISION RATE**
72/73 to 83/84 School Year

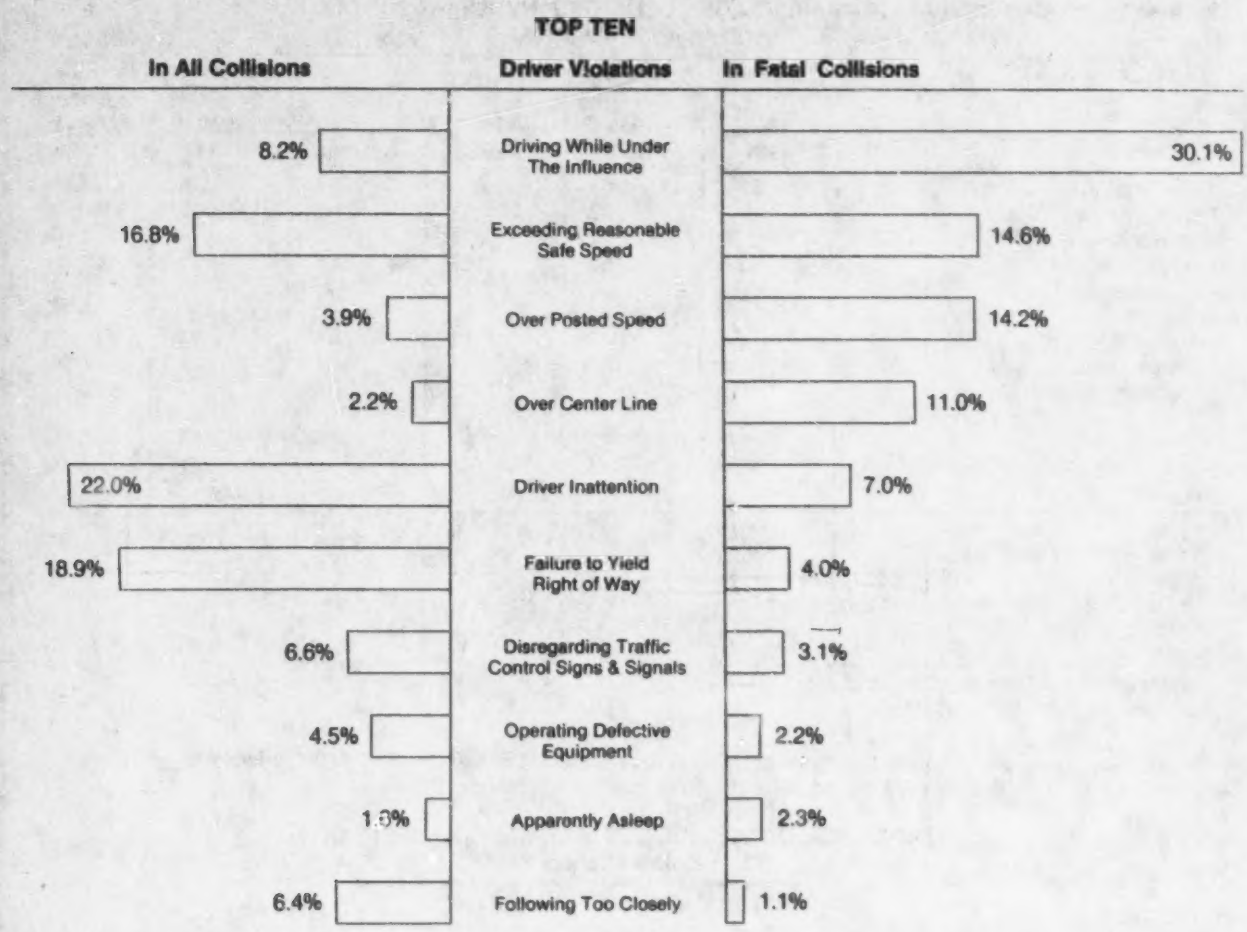


CONTRIBUTORY DRIVER VIOLATIONS

Overview

Driving while under the influence of intoxicating liquor contributed to 30.1% of the driver violations in fatal collisions and 8.2% of all investigated collisions. Driver inattention contributed to 22% of all investigated collisions and 7% of the violations in fatal collisions (Figure 10-1).

Figure 10-1



VEHICLE DEFECTS

Overview

In investigated collisions during 1984, only 5.2% of the accident-involved vehicles were found to have contributory vehicle defects. The most common defect was worn or smooth tires, a defect found in 2,996 vehicles. This represented a 1.4% decrease in this category compared to the previous 4-year average. Defective brakes, the second most contributory defect, was found on 1,785 collision-involved vehicles in 1984. This was an increase of 18.5% compared to the baseline (Table 10-1).

Table 10-1 **VEHICLE CONDITION**
(In Investigated Collisions Only)

	1980	1981	1982	1983	4 Yr. Avg.	1984	Percent of Change 1984 to 4 Yr. Avg.
Defective Tires:							
Worn or Smooth Tires	3,302	3,054	2,828	2,964	3,037	2,996	- 1.4%
Puncture or Blowout	683	557	446	462	537	367	- 31.7%
Defective Brakes	1,543	1,585	1,383	1,514	1,506	1,785	+ 18.5%
Defective Lights:							
Headlights	220	184	150	149	176	143	- 18.8%
Rear Lights	482	403	394	361	410	394	- 3.9%
Other Lights/Reflectors	122	117	95	95	107	122	+ 14.0%
Defective Steering	360	334	281	308	321	381	+ 18.7%
All Other Defects	1,316	1,080	1,145	1,387	1,232	1,439	+ 16.8%
No Defects	135,008	136,592	123,345	131,273	131,555	139,320	+ 5.9%
Total Vehicles Involved	143,036	144,082	130,067	138,513	138,881	146,947	+ 5.8%